ENGINEERING NEWS-RECORD

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It rains in Churubusco, too!

As in every community, Churubusco, Indiana, has to drain storm water and sanitary sewage. In 1937 they installed a combined sewer outfall. Part of the line was Armco PAVED-INVERT Pipe.

When inspected in 1950 the Armco PAVED-INVERT Pipe showed no evidence of deterioration despite having carried highly erosive effluent. In contrast other material installed at the same time was severely eroded.

This is a graphic example of why Armco engineers developed PAVED-INVERT Pipe more than 25 years ago. It means balanced design that provides extra protection where the wear is greatest—is added assurance of obtaining full value from your drainage investment.

Providing better products to meet specific needs has been standard practice at Armco for more than 40 years. A few examples are FLEX-BEAM Guardrail, PIPE-ARCH, STEELOX Buildings and sturdy MULTI-PLATE Bridges.

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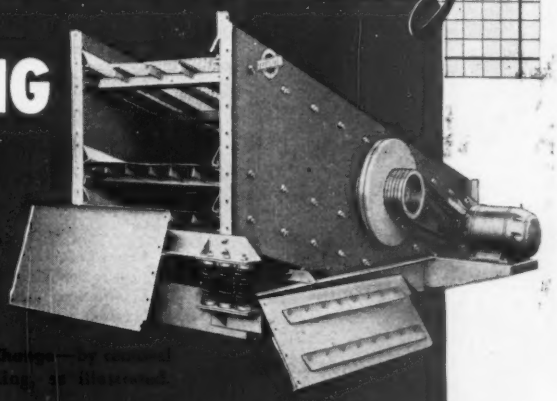

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V-4

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ENGINEERING NEWS-RECORD

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Volume 148 APRIL 24, 1952 No. 17

WALDO G. BOWMAN
Editor

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Number of copies of this issue printed, 52,794

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Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

April 24, 1952 ENGINEERING NEWS-RECORD Vol. 148—No. 17

Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**

Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Curtis W. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address.

Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.

Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada, $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere countries, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

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Reinforced Concrete
PRESSURE PIPE

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"We attribute most of the success of this job to the *constant efficiency* of our McKiernan-Terry 9-B-3 Double-Acting Pile Hammer," stated Mr. H. E. Wagner of the Wagner Construction Co., Kingston, Pa.

The contractor went on to say, "We developed a unique but simple method of putting down seepage relief wells behind an existing levee on the North Branch of the Susquehanna River near Kingston. It required *a constant flowing action* of the driving hammer to keep the 16" pipe moving through a *very hard strata* of cement gravel 25 to 40 feet underneath the surface.

"The hammer performed so smoothly that we were able to place these pipes practically *within an inch* of the required depth, and during the entire operation experienced no difficulty whatever. In fact, *we cannot praise our McKiernan-Terry Hammer too highly.*"

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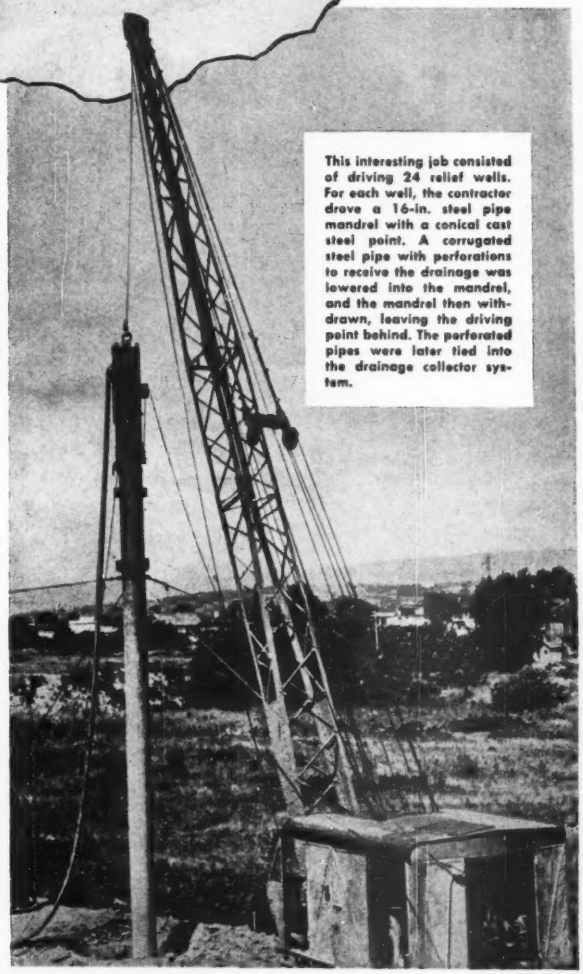

This interesting job consisted of driving 24 relief wells. For each well, the contractor drove a 16-in. steel pipe mandrel with a conical cast steel point. A corrugated steel pipe with perforations to receive the drainage was lowered into the mandrel, and the mandrel then withdrawn, leaving the driving point behind. The perforated pipes were later tied into the drainage collector system.

MK 309

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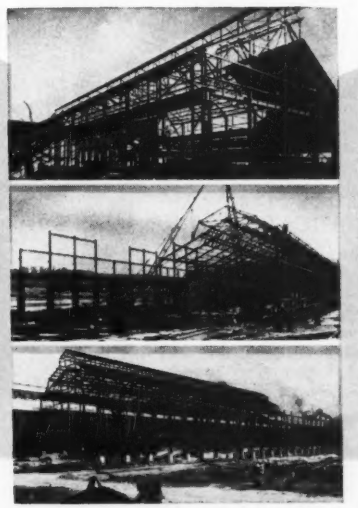

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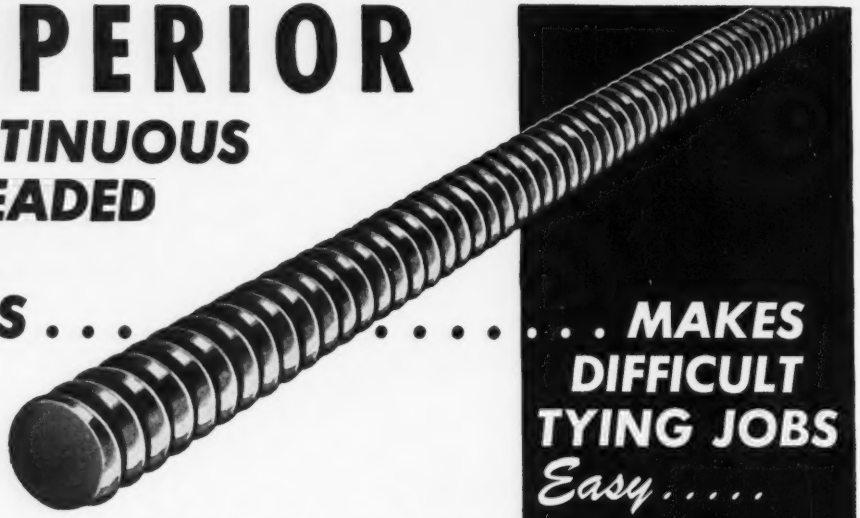

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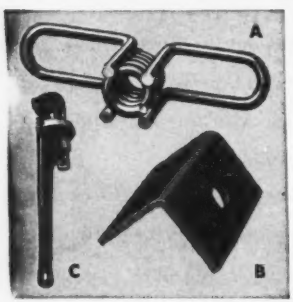

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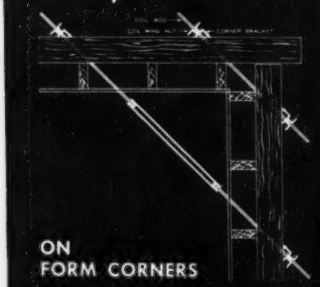
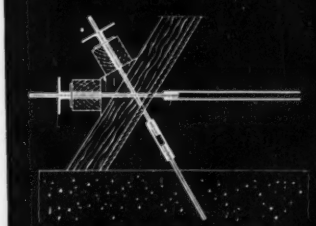
Heavy-duty Stillson type wrench with special jaws for gripping and turning Coil Rods with least damage to threads.



ON FORM CORNERS



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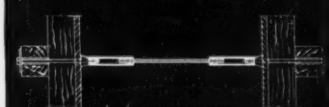

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• For further information contact Pittsburgh Plate Glass Company, Industrial Sales Division, 2000 Grant Building, Pittsburgh, Pa., or any of the following factories nearest you.

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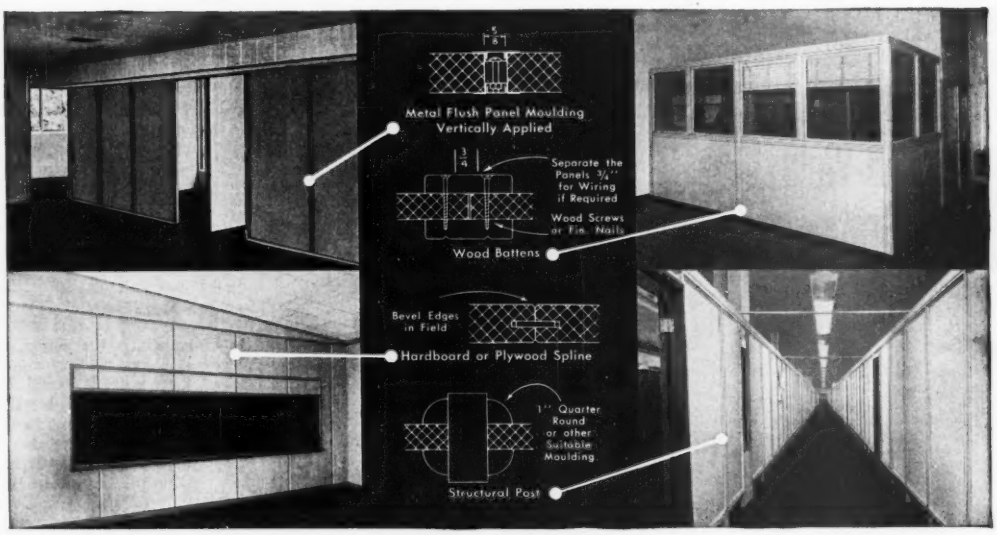
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READER COMMENT

Bridge economics

Sir: The problem, presented in the article entitled "Bridge waits to cross river" in the Feb. 28 issue of ENR, of having a river "here" and a bridge "there" seems to permit two solutions. The article itself mentions but one—moving the river from "here" to "there" at an estimated cost of $7,900,000. Leaving aside for the moment the question of the propriety of saving $400,000 at a cost of $7,900,000, the other possible solution, as suggested in the title, still offers itself—moving the bridge from "there" to "here." Considering the cost of the bridge ($1,970,000 plus $400,000 saving) this second approach to the problem would also permit the building of two more bridges should the river change its course twice more, with the total cost of the three bridges less than the cost of moving the river. After all, the river "belongs" anywhere in its floodplain.

The question of propriety, mentioned above, could also be raised. The $400,000 saving would seem to be a saving only if someone else pays for moving the river. Does it not seem somewhat presumptuous to expect a contribution of about five cents from every man, woman and child in the United States for the "contemplated convenience" of the people of Decatur?

ARTHUR TOCH
EMMETT LAURSEN
Iowa City, Ia.

Erosion prevention a myth

Sir: In your issue of Mar. 16, George R. Wadleigh, consulting engineer, raises some questions as to the relationship between silting of reservoirs and erosion control, on which I wish to comment.

The idea that soil erosion can be stopped is one of the myths that has grown up in recent years. It is essentially the acceleration of the rate of erosion that has been caused by activities of man that can be partially altered. In order to stop soil erosion, it would be necessary to stop one of nature's great geologic processes—quite an order.

The erosion which formed our valleys and mountains had proceeded for ages under surface cover conditions which in most areas were probably far superior to those which can be obtained by any feasible restorative measures. In other words, when we talk about measures to keep silt out of reservoirs we should realize that the considerable portion originating from nature's great erosive process will never be stopped.

Where the fertility of lands can be preserved by justifiable soil saving measures, this is well worth while from the viewpoint of preserving our agricultural resources and the incidental effect of reducing the silt load in the streams tends to increase the justification. However, in the great plains and western mountain states, there are large areas in which the available fertility and moisture support only sparse cover, even under virgin conditions. It is questionable whether there are any economically feasible means of reducing erosion sufficiently to lengthen appreciably the life of large reservoirs in these areas.

I believe it will be found to be the exception where the useful storage in a large reservoir will be encroached upon by silting within the period of amortization set up for economic justification. Of course, it would be well if there were no appreciable encroachment within a considerably longer period. In many large reservoirs there will be no serious depletion of the usable storage within the foreseeable project service life.

The following tabulation gives the estimated time required for silting of the storage space below ordinary minimum operating levels in some of the major TVA reservoirs. This estimate does not take into consideration the effects of improved land use in the Tennessee River Basin.

Project	Years
Norris	800
Cherokee	500
Fontana	680
Hiwassee	560
Blue Ridge	320
Kentucky	860
Wheeler	400
Guntersville	1380

CHARLES W. OKEY
Chief, Flood Control Branch
Tennessee Valley Authority
Knoxville, Tenn.

Oldest U. S. building firm?

Sir: We are trying to determine whether or not we are the oldest U. S. building construction company. We have been continuously in business since 1864.

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Vice President
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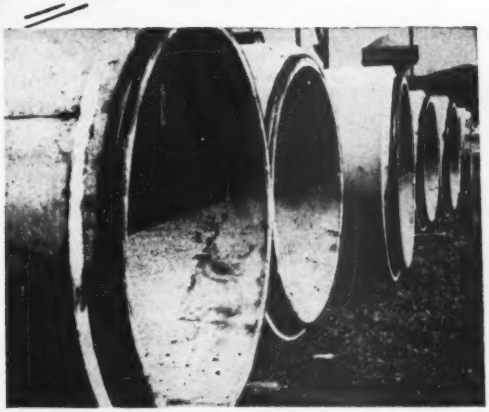
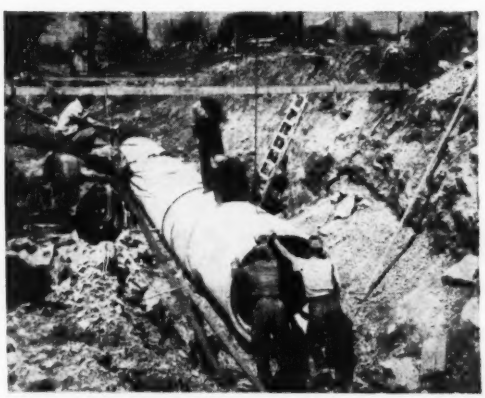


Pipe can be stockpiled within a few feet of installation ditch. (Note rubber gaskets.) It's then lifted by crane and lowered into position. So remember, Universal can . . .



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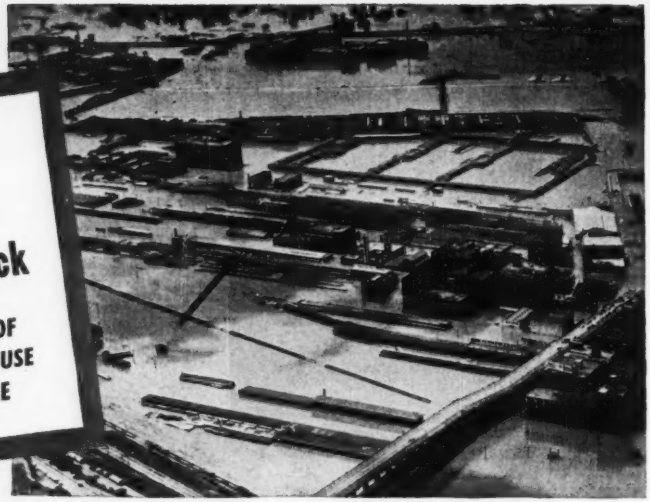
Greater Kansas City's Valiant Come-Back

SPEEDY REBUILDING OF SANTA FE FREIGHT HOUSE A TYPICAL EXAMPLE



Faster Thorough Curing with 'Incor' 24-Hour Cement Assures Utmost in Heavy Duty Floor Service

● An idea of the driving energy behind the great comeback of Greater Kansas City, after last July's catastrophic flood, is conveyed by all-out speed in rebuilding the Santa Fe Freight House (arrow in photo, above) in the Central Industrial District.

As soon as flood waters receded, tons of debris were cleared out, new fill brought in, and the structure rebuilt, with a heavy-duty 'Incor' concrete floor replacing the old wooden floor.

Concreted two bays at a time, 'Incor' concrete was in use the day after placing, saving vital time. The Freight House, with its strong, durable, new floors, 3700 ft. total length, was back in full service ten days after the water receded!

By curing thoroughly in the short time concrete can be kept wet on most jobs, 'INCOR'* 24-Hour Cement assures the utmost in heavy-duty service . . . lowest annual cost for many years' hardest use. *Reg. U. S. Pat. Off.

THE ATCHISON, TOPEKA & SANTA FE RAILWAY SYSTEM
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Concrete Floor Contractor: **JOHN ROHRER CONTRACTING COMPANY**
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ANOTHER SIGN OF STRONG HOUSING DEMAND

There is good news for homebuilders in the latest Federal Reserve Board survey. An FRB survey of consumer plans for spending and saving shows that people plan to buy just about as many new homes in 1952 as they did in 1951. And tentative plans for 1953 are equally promising.

This means at least two more years of housing boom—if it works out as the survey indicates. And there's plenty of reason to think that it will do just exactly that.

The FRB survey has had a phenomenal record for accuracy since it was started in 1946. In all but a few scattered instances, it has correctly foreseen changes in consumer spending for housing and consumer durable goods. And in 1949 and 1951—when a lot of forecasters missed the coming changes—the survey hit events just about on the nose.

• **What they said**—Actually, the Federal Reserve Board asked consumers several questions about their plans for buying homes. Here's how the answers stack up:

1) The number of people with fairly definite intentions to buy houses this year was about the same as in 1951. Interest in existing homes was just as strong as a year ago; intentions to buy new homes had decreased slightly—but very slightly.

2) The number of people with tentative plans—as opposed to "fairly definite plans"—was smaller than a year ago. This suggests that there may be some slight decline in sales of new houses—but such a decline, if it comes, is not likely to amount to much.

3) Plans for buying in 1953 are at least as common as plans for buying in 1952. These plans, of course, are too far in the future to be a sure guide to what will happen. But they certainly throw a promising light on the housing picture for next year.

4) But consumers have certain qualifications about these plans. They assume there will be no significant change in prices, quality or credit conditions. So a burst of inflation, drop in quality or tightening in credit might cut their purchase plans markedly.

But—fortunately—it does not seem likely that quality, price or credit developments will interfere with consumers' housing plans. Right now, the outlook in all these areas is good.

Prices of houses will not be under heavy pressure this year. Wage costs will be higher than in 1951, but the trend of many other costs is likely to be more level than it was last year. Quality may well improve, now that there is increasing promise of a better supply of materials. And it now seems clear that there will be enough mortgage credit—at reasonable rates of interest—to finance any likely amount of housing demand in 1952. Terms on down payments and duration of mortgages may also improve if the growing political pressure to relax Regulation "X" is effective.

• **More from the survey**—Another highly significant finding is that consumers are cutting plans for buying durable goods while housing demand holds up. Consumers plan to buy less major household goods than in 1951—quite a bit less in the case of some electric appliances. Just about the only industry in this group that can expect to do as well as in 1951 is the television industry.

So the survey shows demand for housing is one of the really solid spots in the economy. That's the big meaning of the FRB results. Either people need new houses more than they need new refrigerators and electric ranges, or they think that houses are a better investment at present day price levels. In either case—it's a good sign for homebuilders.

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You'll find this versatile steel mesh has high bonding strength in concrete and effectively distributes concentrated loads over a wide area. You'll also like Ryex for enclosures and similar applications because it is more rigid than an equal weight of solid flat-rolled steel, yet affords good ventilation and high visibility through its open diamond pattern. Both standard and flattened Ryex are safe to handle since all sharp edges have been removed and you can count on quick shipment of Ryex from Ryerson. Just call our nearest plant.

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THE CONSTRUCTION WEEK

AEC ENIGMA—Present and potential supply of electric power is a key factor in location of the Atomic Energy Commission's proposed $1-billion gaseous diffusion plant. To be the largest single plant in AEC expansion plans, it is part of the proposed $4-to-$5 billion package to go to Congress soon. AEC is now concentrating its site surveys in the Ohio River Valley. Interim power requirements for construction would gradually increase to 400,000 kw and would be obtained from existing power systems. This power would be used for a period of 12 to 18 months and would then gradually be relinquished as a permanent power source is completed. Ten or more private power companies in Ohio, Indiana, and Western Pennsylvania are now working out details. Bulk of the rest of AEC expansion will be added to existing facilities.

THREE DOWN, ONE TO GO—Gov. Thomas E. Dewey last week signed into law a bill that puts New York behind 4-state development of the Delaware River for water supply. New Jersey and Delaware last year passed legislation assuring their participation in the $550-million project of the Interstate Commission on the Delaware River Basin (Incodel). If Pennsylvania follows suit in '53, a permanent authority will be established to study the Incodel plan with powers to finance and implement it. In 1951 Governor Fine appointed a committee to look further into Pennsylvania's interests in the plan. Since then, three consulting firms—Gannet Fleming Corddry & Carpenter, Greeley & Hansen and Chester Engineers—have been assigned the study. Their recommendation is yet to come.

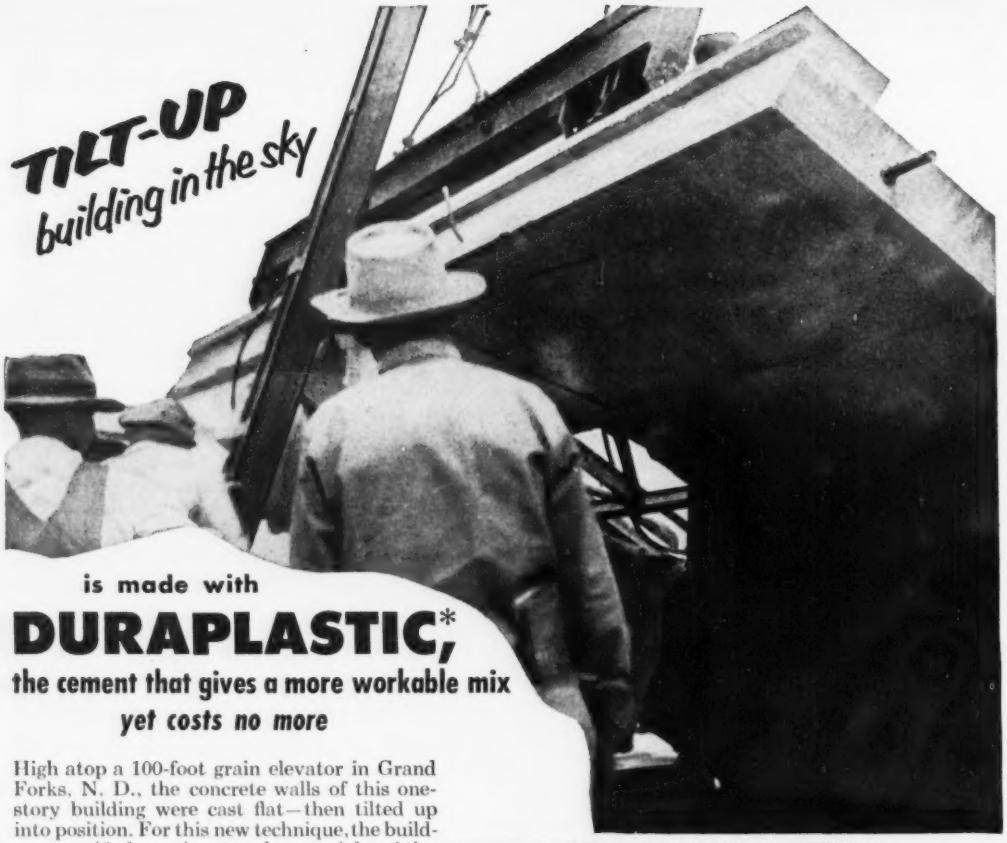
COPPER RELAXED—Manufacturers of 30 building materials were granted permission last week by the National Production Authority (in Direction I to Order M-74) to use what copper and copper-base alloys they had in stock in their inventories on July 1, 1951. Among the items granted relief were such building materials as: doors; door frames; ornamental metal work, including grilles, railings and fittings; and straps and hangers for pipe. Those still on the frozen inventory list are: downspouts; gutters and leaders; linoleum stripping; store fronts; and terrazzo strips.

ALUMINUM PRICE RISE—If Wage Stabilization Board recommendations in the dispute between the aluminum industry and the CIO United Steelworkers run close to its recommendations for the steel industry—the price of aluminum ingot will have to go up one to two cents a pound. This estimate was made last week by Alcoa President I. W. Wilson. Hearings before a WSB panel were completed March 24. WSB is sifting the findings and is expected to announce its recommendations in about two weeks.

For cost and volume index see page 135.

IN THIS ISSUE—Inside story of the U.S. Army Corps of Engineers victory in Omaha over the flooding Missouri River (p. 21) . . . Flood waters cut through dam (p. 24) . . . Civil functions feud reopens (p. 25) . . . Self-authorization limits are increased (p. 27) . . . Labor-contractor troubles spread (p. 28) . . . WSB outlines official health and welfare rules (p. 30) . . . Atlanta expressways stalled (p. 34) . . . Egyptian turmoil delays power project (p. 48) . . . Pittsburgh's urban redevelopment dreams are coming true (p. 61) . . . Precast panels inclose skyscraper (p. 67) . . . Steel system supports big concrete arches (p. 71) . . . Piston-type soil sampler described (p. 77) . . . ASTM reaches its 50th birthday (p. 86) . . . Housing awards show upward trend (p. 131) . . . Roman Catholics are big builders (p. 133) . . . Court voids $11 million award (p. 136) . . . Editorials (p. 160).

TILT-UP *building in the sky*



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High atop a 100-foot grain elevator in Grand Forks, N. D., the concrete walls of this one-story building were cast flat—then tilted up into position. For this new technique, the builders specified a *time-tested* material—Atlas Duraplastic air-entraining portland cement.

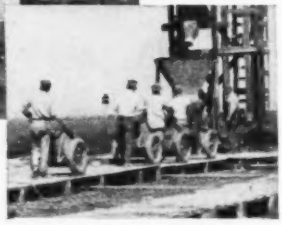
They already had proof of Duraplastic's performance—because the elevator below was also Duraplastic-made! The increased plasticity and cohesiveness of Duraplastic concrete, which aids proper placement and helps to improve surface appearance, resulted in this neat slip-form job.

For more than a decade, Duraplastic has made better concrete for all types of structural jobs. Yet it sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

DURABLE JOB—Water gain and segregation are minimized by Duraplastic's air-entrainment feature, and resulting concrete is fortified against the effects of freezing-thawing weather.

General Contractor: Northern Construction Co., Grand Forks, N. D.

Sub-Contractor: Hagenson Construction Co., Minneapolis, Minn.



THE MIX SHOWS—There's an important difference when the mix is made with Duraplastic cement. Less mixing water is required for a given slump, yet the concrete is more plastic, more uniform and easy to place.

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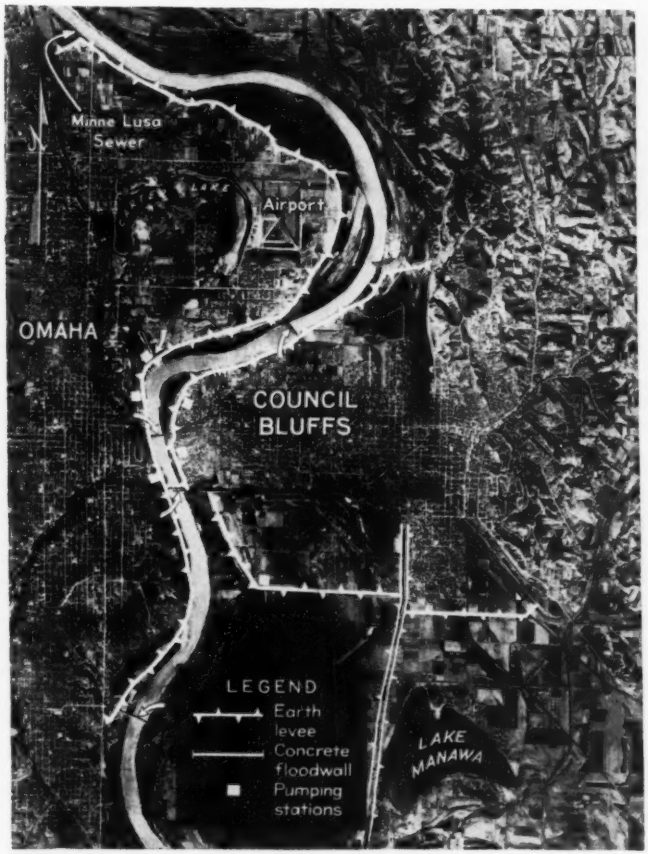


Missouri whipped at Omaha —won't hurt Kansas City

Flood fighters help Omaha levees carry 3.6 ft greater head than they were designed for; Kansas City barriers to have 10 ft to spare

By J. Roland Carr
Associate Editor, Chicago

When the Missouri went on a wild rampage last week, it won just about all of its major battles with man until Omaha was reached. There it met its master in as finely conceived and constructed a system of flood walls and levees as any city could hope for.

Tested beyond their planned-for endurance, but strengthened and heightened with sand bags and flashboards by one of the most formidable flood-fighting teams ever assembled, the walls and levees channeled the record flood flow safely past the city.

At the start of the fight, the river had the upper hand. It was known to be carrying more water than had ever come from the upper valley before. One prediction was for a 31.5-ft crest at Omaha; the one ENR published last week was 30.4 ft, and the actual crest reached was 30.24 ft.

The all-time flood of 1881 chalked up a gage reading of 24.6 ft, and the Corps of Engineers had designed the levee and wall system—protecting Omaha and the neighboring city of Council Bluffs across the river—to carry safely a 26.6 ft flood, but had also provided an additional 5 ft freeboard. Thus the chances to hold the flood were slim, and many felt hopeless.

That the fight was won was due largely to the Army Engineers' organization, quick planning, fast but orderly execution, and coordination teamwork of men and equipment. Unquestionably, too, the levees were well designed and constructed.

• **Sand bags and flashboards**—Even before the highest crest was predicted, the Corps of Engineers started its plan of increasing the heights of the Omaha-Council Bluffs levees.

About 10:00 a.m. April 11, the U. S. Weather Bureau raised its previously predicted 28.5-ft crest to 30.0, to hit Omaha by April 17. This meant only 1.6 ft of freeboard, reduced later to 1.36 ft when the river reached its record crest April 18.

A telephone conference between Brig. Gen. Don G. Shingler, Missouri Division Engineer, Omaha, and Lt. Gen. Lekis A. Pick, Chief of Engineers, Washington, D. C., produced the order: "Raise the levees 2 ft."

This was a brief order, but it started a chain reaction of marshalling men and equipment seldom, if ever, equalled in flood-fighting.

The job ahead was to add 2 ft of material on top of 23 mi of earth levees, and install 2 ft of timber flashboard protection on 1-mile of concrete floodwall—all within about 6¼ days.

It looked impossible, but Col. Henry J. Hoeffer, Omaha District Engineer, upon whose shoulders fell the responsibility for getting the job done, immediately started telephoning contractors for miles around Omaha. "Rush all of your earthmovers and levee-raising equipment. You get it here, manned with operators, and we'll show you where to start. After the job is done we'll have time to negotiate a contract with you."

• **From far and near**—In true accord

Brig. Gen. Don Shingler gets last-minute flood data from chief of his engineering division, Wendell Johnson. (ENR photo.)

Col. Henry Hoeffer maps out flood-fighting strategy to save Omaha and Council Bluffs. Wall chart shows status of flood.

Flood . . .

with tradition, the contractors stopped whatever they were doing and rushed to the rescue. At the same time, experienced flood fighters from the Kansas City District—who sweated out last year's much greater Kaw River flood—and from other district offices of the Corps of Engineers, flew in to help in the fight.

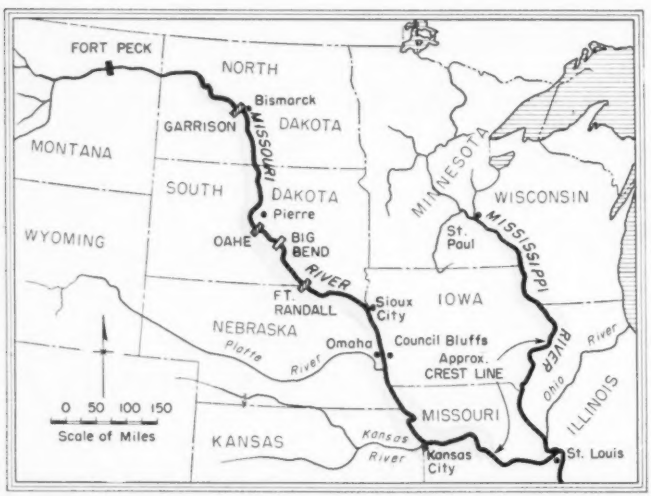
It took only 5½ days to raise the levees and floodwall, and the crest arrived about 24 hours later. Where working space permitted and locations were accessible to earthmoving equipment, the levees were raised by adding compacted earth, sand and gravel. Much of the 23 miles of levees, however, were increased the 2 ft in height by the so-called "mud box" method, in which bottomless timber boxes 2 to 4 ft wide were built along the tops of the embankment, filled with borrow material or sandbags, and sandbagged outside on one or both sides.

Tremendous quantities of timber and sandbags were required. One horseback estimate placed the number of sandbags at 3.5 million, and the amount of lumber at 2 million fbm. Major equipment used in the fight to protect a 20 sq mi area in Council Bluffs and 9 sq mi in Omaha included: 3,100 large trucks; 890 small trucks; 896 water pumps; 210 tractors; 151 portable light plants; 74 sheepsfoot rollers; 73 motorized road graders; 38 draglines and shovels; 19 front-end loaders; 14 barges; 11 big power boats; and 8 electric welding units.

About a third of this equipment was contractor-owned; another third was furnished by the 5th Army and Army Engineers; and the remainder was supplied by local citizens.

There were 6 major contractors and a score or more of smaller concerns engaged in the around-the-clock fight. Contractor and Army Engineer hired-labor forces totaled 1,902. The 5th Army rushed 4,000 men to the rescue of Omaha and Council Bluffs, plus an additional 3,200 to help protect Hamberg, Nebraska City and other threatened cities below Omaha. At the height of the flood fight, the Corps of Engineers personnel totaled 1,326, of which 693 were in the Omaha-Council Bluffs area.

Lt. Gen. Pick, paid sincere tribute to the vast army of flood fighters. Said he: "Fortunately it was a slow-moving, melting-snow flood, but the fact that not a single fatality resulted was due to the unselfish and united action of the flood fighters and the press and radio."



• **Near disaster**—Except for sandboils, which were more or less expected and were everywhere dealt with readily, only one serious threat to the protection afforded by the levees occurred. This resulted from back pressure in a sewer, and caused a blowout of 125 ft of street pavement four blocks back from the levee. About 2 square miles of an industrial area was flooded, before the sewer outlet was plugged with steel beams, sand bags and rock.

No estimate was available as to the total cost of saving Omaha and Council Bluffs from the 400,000 cfs that flowed through the 1,200-ft wide channel separating the two cities. But, obviously, it will be mere "chicken feed" compared to the damage that could have been caused had the order on the levees not been issued in time, nor carried out so expeditiously.

• **Less danger downstream**—As soon as the crest passed Omaha April 18, the Army Engineers leapfrogged their flood-fighting operations on down the river. Here, however, the record-breaking character of the flood will soon be lost. Considerable flooding of agricultural land will occur, although even

here some 47,000 acres protected by levees of the federal system are considered safe.

At Kansas City, the floodwalls and levees are expected to contain the flood, with some to spare. They are designed for a 40-ft crest, and the U.S. Weather Bureau predicted a crest of about 29.5 ft at the Hannibal bridge gage in Kansas City, below the mouth of the Kaw River. This means a maximum flow of 340,000 to 360,000 cfs in the Missouri including, fortunately, a low flow in the Kaw.

By contrast, the Kaw River discharged a maximum flow of 510,000 cfs during last year's flood, at which time the Missouri was flowing 63,000 cfs at Kansas City.

What gives Kansas City good protection from this flood is the fact that, shortly after the Kaw River flood last year, the Corps of Engineers awarded $8.6 million worth of contracts for the restoration of damaged flood walls and levees there. This work is just now reaching the degree of protection that prevailed prior to the July, 1951 flood, according to Col. L. J. Lincoln, district engineer at Kansas City.

• **Pick's comment**—In appraising the successful fight to save Omaha and Council Bluffs, General Pick's comment was:

"A flood fight is never won. The cost must always be too high—in dollars and toil, and in the anxiety and misery that only the displaced refugees can know. The best that can be said of this or any other successful battle against a major flood is that the fight was not lost."

Mississippi flood

LaCrosse, Wis.—The Mississippi River crested at 15.33 ft here last Sunday, well above the 12-ft flood stage. But a 17.6-ft high sand dike over 2 mi long and 10 ft wide on the city's north side continued to hold back the river. The fight to hold it will continue ten days until the river is below flood stage again.

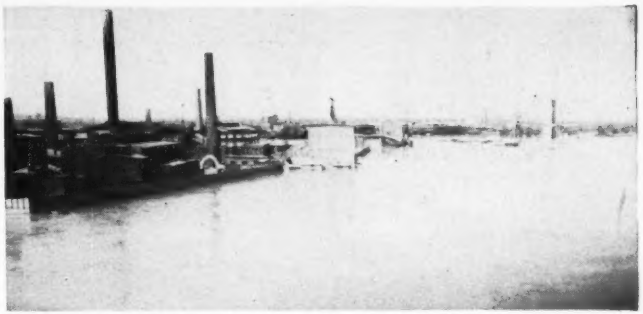
Peak of the flood was expected to arrive at Prairie du Chien, 60 mi. downstream from LaCrosse, Tuesday night or Wednesday.

Army Engineers reported the Mississippi flood will largely be dissipated by the time it reaches St. Louis. Arrival of the Missouri River crest and the Mississsippi flood will probably not be more than a day or two apart.

Only the St. Louis river front will be in any danger.

Relief for victims

In response to a plea from Gov. Val Peterson of Nebraska, President Truman last week allocated $250,000 for relief of flood victims. Money will come from the disaster relief fund. It will be administered by the Federal Housing and Home Finance Agency.



TIMBER FLASHBOARDS 2-ft high were placed on top of a mile of concrete floodwall (left center) to protect Omaha's commercial district. When this picture was taken, the river had 2-ft higher to go. (Corps of Engineers photo.)

GRIM TASK WITHOUT LETUP—Flood fighters toiled round-the-clock at centers such as this one at Council Bluffs, Ia., filling sand bags and hauling them to danger points along the levees. (Wide World photo.)

NPA aids flood areas

The National Production Authority last week promised quick action on all applications from flood-stricken areas.

It also amended Direction 2 to CMP Reg. 6 to include residential construction. This regulation authorizes owners of buildings in the distressed areas to obtain materials for reconstruction or repair of damage caused by the flood.

The regulation provides for the use of the allotment number "X4" on delivery orders for controlled materials. Builders may self-authorize controlled materials orders up to 25 tons of carbon steel, 2,000 lb of copper and 1,000 lb of aluminum for all nonresidential jobs and for multi-family apartment projects. For single-family to four-family houses, they may self-authorize up to the limits set in NPA order M-100 (ENR March 13, p. 27).

Larger requirements for controlled materials will be acted upon immediately upon application to NPA.

The rating ("DO-X4") will be used on deliver orders for building equipment, building materials other than controlled materials, production machinery and production equipment needed because of flood damage.

The President has already designated as disaster areas South Dakota, Iowa and Minnesota and is expected to designate other states as soon as the need becomes apparent.

FLOODWATERS CUT DAM—Frenchman Creek, flooding Milk River tributary, cut a new storage dam to pieces near Hinsdale, Mont. (Wide World photo.)

Flood tears gap in dam

A flood stage exceeding all previous records and estimates resulted in a break in the natural ground around the spillway of the Montana State Water Board's Frenchman Creek Dam last week.

The spillway was designed to carry 8,000 cfs with three feet of freeboard. Curbstone estimates received by water board were that peak ran between 12,000 and 20,000. The survey gauge station washed out after that.

Geological survey records showed previous peak flood stage was 5,440 cfs on March 29, 1925. Measurement by survey engineers five miles downstream from dam on the evening before the morning of the flood showed 7,500 cfs.

• **How flood came**—The heavy snows of last fall came early with no unusual winter melts. The weather suddenly warmed up at the end of March and the first of April. The drainage basin consists of over 2,000 sq mi going up to the cypress hills of Canada.

• **How break came**—Water board officials said the concrete spillway was handling water nicely the night before the break. Then a sudden surge exceeded capacity and cut into earth in a slow break through which augmented water added to the flood.

At last report the break was 220 ft wide. The break is not in the dam fill itself, but in natural ground where the concreted spillway is located.

Control tower, conduit works and main earth-fill dam are still intact.

• **Construction notes**—The $150,000 dam was completed last summer by Long Construction Co. of Billings and was started in the previous fall. Main fill 900 ft long with 2,000 ft of low dike. Capacity 7,000 acre-ft.

The dam was built to provide supplemental water for 7,000 acres in Frenchman Creek Valley. The dike was 40 ft high with 10 ft of freeboard. About 80,000 yds of earth fill had been used in building the dam.

California to rule state water resources

The State of California has made two down payments on eventual "home rule" of its vast water resources.

In mid-April Gov. Earl Warren signed bills passed by a budget session of the legislature which:

(1) Earmarked $10 million towards the purchase of the Central Valley Project from the federal government if a decision to take over the development is reached;

(2) Appropriated $800,000 for preparation of plans for the state's $1-billion Feather River Project.

Earmarking of the $10 million followed close upon State Engineer A. D. Edmonston's submission to the water project authority of California of a 287-page report finding that state ownership is financially feasible.

The report outlined several plans for financing the purchase, each involving the issuance of revenue bonds to be paid off over a period of 50 years. Purchase price would be upwards of $385 million, the amount so far invested in the water and power development under the supervision of the Bureau of Reclamation.

The Water Project Authority has the power to issue such bonds; no additional state legislation would be necessary. However, Congress would have to approve the transaction.

• **Project status**—The $800,000 appropriation was the legislature's second endorsement of the Feather River Plan. Issuance of revenue bonds for state construction of the project was authorized at the 1951 session of the state lawmaking body. An application for permission to build the project is now before the Federal Power Commission.

The multi-purpose project would include a hydroelectric dam on the Feather River above Oroville in northern California which would back up 3.5 million ac ft. Stored water would be transported south hundreds of miles to the Mexican border, supplying water-minus regions including the critically short Santa Clara-Alameda counties and the Santa Barbara-Ventura and San Diego areas.

State acquisition of CVP—long a California dream—has been coming into the news frequently in recent months. State Attorney General Edmund G. Brown, remarking at the growing sentiment for state control, is on record as saying, "if anyone has a plan acceptable to the people by which California can take over the CVP I will sponsor it." The State Engineer's report may offer that plan.

Strongest pressure for the purchase comes from those involved in controversies over water rights and over the 160-ac limitation and power distribution features of reclamation law.

St. Lawrence power

All detailed engineering for the $200-million St. Lawrence power project is complete, and engineers of the Ontario Hydro Electric Power Commission are preparing tenders. Tenders will be called within a few days after decision of the International Joint Commission to separate the power and navigation services of the St. Lawrence Seaway in compliance with President Truman's recommendation, according to the HEPC. A favorable decision is expected this summer.

Reorganization move stirs feud over civil functions

A years-long history of bitter controversy crashed back into public consciousness last week, as proponents of two major government construction agencies girded for another battle over plans to merge activities of the Corps of Engineers and the Bureau of Reclamation.

After a three-year official lull, President Truman, himself, had thrown down the gauntlet anew with the news "leak" that he would shortly send to Congress another reorganization plan that would merge Army civil functions with the Reclamation Bureau.

And, according to well informed sources (ENR April 17, p 23), the new plan would contain an exceedingly bitter pill for supporters of the Army Engineers: It would merge their civil functions work with reclamation work under the wing of a new division or bureau of the Interior Department.

Although the President's plan itself had not actually been submitted as this week began in Congress, Mr. Truman had told press-conference questioners that it would go up to Capitol Hill shortly.

In fact, daily conferences continued this week between Budget Bureau and Army, and Interior officials, over the proposal. The conferees are working against a deadline of May 1, when a reorganization plan must go through in order to give Congress 60 days to consider it.

If the plan goes through, the Interior Department will control about 85% of the U. S. spending for river work—about $750 million a year.

• Hoover didn't start it—The long-standing controversy came to a head first almost exactly three years ago (ENR March 24, 1949, p. 9) when the Commission on Reorganization of the Executive Branch of the Federal Government, headed by former president Herbert Hoover turned in its formal report on the Interior Department.

That report urged merging of engineer and reclamation activities on flood control and river use—but it also called for the merging of a number of other federal construction activities—and it called for formation of a "Division of Water Resources and Control."

A three-member minority of the Hoover group differed from the report in that they wanted to see a new "Department of Natural Resources" carved out, to supervise the same functions.

Herbert Hoover chairmaned reorganization commission. (Harris & Ewing photo.)

But the committee report was only a major engagement in a long series of battles over such construction work. A basic fight has been that the Corps of Engineers—as the only organized engineering service available to the government in early days, as well as for purely military reasons—long held the assignment of regulating the rivers alone. The later emergence of the Bureau of Reclamation cut into its functions, and muddied the question of jurisdiction over streams, causing endless skirmishes between the services.

Another basic point of trouble has been a vociferous group who have seen in the Bureau's actions of the past 20 years (enforcement of the 160-acre irrigation laws, adventures into power production and rural electrification) steps toward socialization of the nation.

Still another is a political fact: The Corps of Engineers, because it is designated as the agency to carry out investigations of navigability and the like, has always been far more responsive to congressional wishes than to those of the Executive; the Bureau of Reclamation, bossed by a cabinet officer, has often seemed more responsive to the President.

• Other issues—Many other points have of course also been at issue—the majority report of the Hoover Commission in 1949 called attention to them. And arguments over the matter, in recent years at least, have seldom been in other than a violently partisan vein.

In any case, when originally proposed, the plan was given little or no chance of success—it had all the earmarks given political dynamite. Today the political situation is different—Army Engineers have been under attack in Congress for management of overseas construction, to cite one example.

But under the rules that Congress itself set up three years ago, the reorganization plan has a better-than-even chance to get through: Either house can kill a reorganization plan by a constitutional majority vote against it—but if that vote isn't obtained, the plan becomes law.

And with a good majority of congressmen already out mending fences and campaigning in a Presidential year, it becomes a real question whether the needed majority can be mustered.

• Original proposal—The majority report of the Hoover Commission recommended the following action be taken:

1. The Department of the Interior be given more clearly the mission of developing subsoil and water resources. As these activities require large public works, "we recommend that other major public works also be managed by this department."

2. "Land management functions (for both forest and range lands) be transferred from the Interior to the Agriculture Department."

3. The Department of the Interior would have a new division of natural resources, under which would be grouped four "services": water development, building construction, recreation and mineral resources.

4. A board of impartial analysis (composed of engineers and others) would sit in the President's Office to pass on proposals of the new division on engineering and construction matters.

5. Along with engineers of other services to be transferred, Army Engineers "who can be spared" from military duties would be detailed to the new division in positions similar to their posts in the Corps of Engineers.

The plan, the commission report said, would have a number of important results: It would reduce the number of reports to the President; it would make possible regional organization of watershed developments; would bring together under one management, construction operations now being carried on by some 12 separate agencies.

Air Force improves its barracks

When new barracks were needed last year at Offutt Air Force Base, Omaha, Neb.—headquarters for the Strategic Air Command—Gen. Curtis E. LeMay frowned on the old-type open-bay structure in common use and bade his engineers design better quarters for the same amount of money.

Brig. Gen. Lee B. Washbourne, staff air-installations officer, and Col. Louis Ferony, a construction expert, got the job.

General LeMay instructed them not to look in the books for an answer, but to try a new approach—to use new materials and new techniques, if necessary. He wanted a building with two-man rooms for privacy, with better and more convenient bath facilities and with a more pleasant atmosphere throughout—at the least possible cost. He got what he asked for.

• **Sandwich walls**—Low cost was made possible primarily by use of new materials and techniques. Large sandwich-type panels of sheet steel packed with glass-fiber insulation form the outside walls. Interior walls are made of 1¼-in. thick asbestos-cement sandwich panels. Window and door frames were prefabricated, and the floors were topped with concrete and finished with asphalt tile.

By pre-assembling as many parts as possible, the engineers worked out a design that could be built for a gross cost of $9.68 per sq ft, as against a cost of about $12 per sq ft for private civilian housing.

• **Livability improved**—The new-type SAC barracks provides a 10 x 14-ft room with a large closet for every two men. It has individual beds, not double bunks. It provides one shower for every four men, compared to one for every 16 to 18 in the old design. It has a lavatory for each two men, against one for 8 or 9 in the standard plan.

Buildings are 282 ft long by 37 ft wide, three stories high, and contain 3,000 sq ft of floor area. They house 216 airmen.

Advantages of the new design are better livability; increased privacy, affording opportunity for study; separate bath for each two adjoining rooms; increased light and ventilation; closet space for personal belongings; ample recreation facilities; incombustibility of materials; speed of construction and exceptionally high degree of permanency.

• **Civilians give furnishings**—Kenneth G. Harvey, president of the Omaha Chamber of Commerce, and a group of Omaha businessmen, after being shown a working model of one of the new barracks, offered to take over the furnishings job. The estimated $38,224 needed to do the job was quickly raised. It bought steel dressers, comfortable beds, chairs, lamps, night tables, venetian blinds, colorful drapes and a few throw rugs.

SAC airmen now live in comfort and privacy in the new barracks at a cost of $1,508 per man, which is still considerably below the $1,867 per man cost which was the case in the old-style domicile.

Wunderlich changes face early action

Action is expected around May 1 by a Senate Judiciary Subcommittee on legislation to offset a Supreme Court decision in the Wunderlich case last fall.

The subcommittee is considering S. 2487 introduced by Sen. McCarran, which would provide for judicial review of decisions of government contracting officers involving questions arising under government contracts. The Supreme Court held that only basis for judicial review of contract decisions was in cases of alleged fraud.

Chances are the committee will come out with legislation that will provide for review on a broader basis.

Other action pending—a Senate Labor Subcommittee expects to report out legislation dealing with two bills before it on industrial safety next week. Both bills, S. 2325 and S. 2714, would provide for government participation in tightening industrial safety regulations, but their bills approach the subject differently.

Sen Humphrey's bill would create a Bureau of Accident Prevention within the Labor Dept. and would keep the program under federal supervision.

Sen. Murray's bill would leave administration of an industrial safety act up to the states, but would provide federal funds for states qualifying under a federal program.

Engineering community

About 100 engineers at Newark, Del., are going to create a home development of their own.

The engineers—civil, mechanical, electrical, and chemical—are employed by E. I. DuPont de Nemours Co. Most of them have been recently transferred to the new engineering office at Newark and were facing a 24-mi daily commuting trip.

The land, which they plan to develop under the name North Star Corp. is less than 4 mi from the new building.

Starting with a small group of men looking for home sites together, the project grew out of the discovery that small plots of land were too dear, and large plots required more participants. The group now numbers 50 and looks confidently at the more than 2,500 transferees to supply the other 50 needed to swing the deal.

The building plots will sell for about $2,500 and will average 30,000 sq ft. Presently agreed-upon restrictions include 1,200 sq ft minimum floor space in houses and 50 ft set-backs from front property lines.

Self-authorization eased

Self-authorization for school and highway projects will be liberalized July 1, according to an announcement last week by the National Production Authority.

Before the third quarter begins, the agency will amend CMP Reg. 6 to raise self-authorization ceilings for the two categories of construction.

Builders of schools will be permitted to self-authorize for each project up to 50 tons of carbon steel (of which 7 tons can be structural shapes), 1,000 lb of copper and 1,000 lb of aluminum. Note that these allowances apply to the total project; they are not on a quarterly basis.

Under regulations in effect until July 1, school project self-authorization is limited to 5 tons of carbon steel, including not more than 2 tons of structurals, and 200 lb of copper, or 100 lb of aluminum if the lighter metal is used instead of copper. These amounts are per project per quarter.

No wide-flange shapes may be self-authorized under the regulation now in force. Until NPA states otherwise, it is assumed that the forthcoming liberalization will also exclude wide-flange sections from self-authorization for school projects.

For highway jobs, the self-authorization limit for structural shapes will go up July 1 from the present 2 tons to 12 tons per project. The Bureau of Public Roads has been fighting for this increase for a long time. It will be a real help to hundreds of smaller highway jobs.

Total carbon steel allowance for a self-authorized road project will remain unchanged at 25 tons. This total, of course, includes the structural steel. There is no rule now against ordering wide-flange shapes for self-authorized highway projects and they won't be barred in the coming amendment. The copper limit for self-authorization will stay as it is—200 lb for a highway job.

Commercial boost

Approval of second-quarter applications for 1,599 commercial construction projects with an estimated cost of more than $726 million was announced by NPA last week. The approvals carried allotments of materials for the current or succeeding quarters.

California received the greatest number with 254 projects worth more than $146 million. New York is second with 156 projects costing more than $118 million.

Both states contain hardship areas receiving special consideration from NPA. These areas are suffering from unemployment in the building trade because of lack of defense industrial expansion construction and the slack in ordinary construction due to NPA construction regulations.

A breakdown of the approvals into 45 categories shows churches lead the list with 638 projects at an estimated cost of more than $142 million. Next largest categories are office and loft buildings with 84 projects worth more than $133 million, and retail stores with 161 projects at a cost of more than $78 million.

In addition, NPA deferred for later action some 350 applications with an estimated cost of $160 million.

The small volume of increase of CMP-4-C commercial applications—in response to the relaxation of controls—has disappointed NPA officials. They wonder if the small response means that commercial projects have been delayed by money problems and not by controls.

Slow flow of commercial construction applications has speeded up agency discussion on the possibility of accepting applications for entertainment and recreational projects.

Rough treatment

Following a hearing in Cleveland last week, regional NPA Hearing Commissioner Harrison W. Ewing ordered suspension of aluminum allotments to Alsco, Inc., and its subsidiary, Alumiwall Corp., for a period of one year. Alsco, which claims to be the nation's largest producer of storm windows and doors, employed about 1,000 at its Akron, Ohio plants. Some had been dropped during the past year because of lack of materials.

Last week the remaining 250 were laid off, and all manufacturing operations were suspended as a result of the NPA order. NPA contends the company exceeded its aluminum allocations for civilian production by 3.4 million lb last year. Alsco admitted using more than 3 million lb—but aluminum brought from foreign countries. NPA held this was a violation, although use of the metal "did not interfere with the defense program, and even though our civilian economy would not have been privileged to enjoy its use unless Alsco had bought it abroad on the foreign, open market."

NPA officials said that within the next two or three weeks six other Ohio and Michigan manufacturers of aluminum products will be charged with NPA violations. Two of these cases will be referred to the Department of Justice for criminal prosecution.

NEWS BRIEFS

• **Emergency service**—Pine Flat Dam on California's Kings River will be used to combat spring flood even though it is only half completed (ENR Oct. 4, 1951, p. 38). This decision was reached last week by the Corps of Engineers who are seeking to minimize damage threatening the rich San Joaquin Valley by the record Sierra snow pack. Right now the reservoir can store 150,000 ac-ft of water and by June 30 this will be doubled. Should the flood flow be greater than the outlets can handle, it will flow through a low block and down the partly completed spillway.

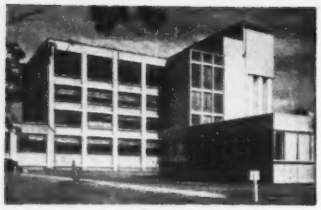
• **Electric plans**—Plans to spend $550 million on expansion in a four-year program already underway, were disclosed last week by General Electric Co. The total is $200 million above the amount announced last year for building plans.

• **Upside-down building**—Construction is scheduled to start next week on Washington, D. C.'s largest privately owned office building, the Matomic. Dubbed the "upside down" building, the $5.8-million structure will have the heavy equipment, normally installed in the basement, put on the top of its roof. Originally the ten-story building was designed to have a bomb-resistant sub-basement 32 ft below grade. National Production Authority approval for steel to do the job was not approved—so now the sub-basement will be merely a garage.

• **Another Russian invention?**—The Army Corps of Engineers has shipped back to this country two damaged Russian-made tractors captured in Korea, for evaluation by the Caterpillar Tractor Co. They are almost exact replicas of the Caterpillar D-7 tractor, built for use by the Army.

• **New nitrogen plant**—The American Cyanimid Co. has agreed to purchase a large tract of land on the West Bank of the Mississippi about eight miles north of the Huey Long Bridge in Louisiana. The land is to be used as a site for the erection of a $47-million nitrogen plant. The company has received certification from the Defense Production Administration to build.

• **Hydroelectric plant** – The Power Commission has been asked for a license to build a $20-million hydroelectric project on the Pit River near Redding, Calif. The request was made by Pacific Gas and Electric Co., San Francisco, Calif.



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Labor-contractor troubles spread as wage rulings lead to confusion

Still making news because of the confusion and changes it has caused in the industry are the Wage Stabilization Board's regulations for construction.

Some of the reports to ENGINEERING NEWS RECORD indicate that contractors cannot bid safely without first settling with the unions.

Others report that wage settlements signed, sealed and deposited in safes have been re-opened under pressure of the union membership who have read of the WSB's wage allowances.

Many cases of confusion in interpreting the regulation are cited as a cause of strikes or threats of strike.

Here is a report from St. Louis, Mo.:

Contractors in the St. Louis area are facing the immediate future with a wary eye, according to Herbert Jones, president of the Associated General Contractors of St. Louis. Jones has been a contractor in St. Louis for 18 years, and is president of the Jones-Kissner Construction Co.

The 22½¢ government-induced hourly pay increase for the building trades has contractors on edge. Negotiations are under way with unions, and since the government has already approved the increase, the contractors are in a bad negotiation position, Jones pointed out.

He said that if the raise is granted, many contractors are apt to come out in the red on present contracts. Although many contractors are bidding on jobs, the probable increase has to be taken into consideration. Some low-bidding contractors appear to be gambling that the full increase won't be effected.

The contractors are now negotiating with the iron workers, carpenters, laborers, operating engineers, truck drivers and cement finishers. The bricklayers are handled differently, the contractors having to go through brick contractors.

• **Brickwork down**—Jones said that in recent years there has been a strong trend in the St. Louis area away from brick structures. In the past, almost all homes in St. Louis were constructed of brick. But recently frame houses with redwood and asbestos siding and prefabricated dwellings have been put up in increasing numbers. This trend applies to industrial buildings. A Union Electric power plant in Cahokia, Ill., across the Mississippi River from St. Louis, was to be built with brick. But due to the high cost of brickwork, a last minute change in design was made and the building was constructed of metal siding. Jones said this last minute change was expensive, but the cost of brickwork was so high it was made anyway.

The bricklayers here were getting $3.05 an hour. Due to the shortage of bricklayers (Jones said there has been a shortage here for years because the union is very difficult to get into) almost all contractors gave bricklayers Saturday work at double time. This was done to keep bricklayers on the jobs.

Two weeks ago the bricklayers got a big raise and now the scale is $3.45 an hour. Jones said this hasn't hit the contractor too hard, because with the raise, double-time Saturdays have been eliminated. But, he pointed out, there is a strong possibility that with bricklayers in short supply contractors may again offer double-time Saturdays to induce bricklayers to work for them.

This would mean $6.90 an hour for Saturday work. If this happens the trend away from brick construction will be increased.

• **Labor relations**—Regarding labor-management co-operation, Jones said there is plenty of room for improvement in the St. Louis area. The business agents here are rough and tough. There have been several reports of alleged shakedown attempts by business agents against contractors, but nothing has been proved

• **Jurisdictional disputes**—One of the big headaches contractors have here, is the squabble between the carpenters and laborers. Jones said it is believed by many contractors that St. Louis may be a "proving ground" for the two to settle disputes. The rest of the country using the results here as a yardstick.

One issue that keeps coming up is who should carry fabricated forms from the point of fabrication to the point of erection. Each union claims this work. Story from many contractors is that the carpenters really don't want this work—it's beneath the dignity of a carpenter.

One contractor said he knows of an incident where a carpenter stood watch, while laborers carried the forms, to sound the alarm if his business agent showed up.

Two-trade walkout

Already near a standstill on millions of dollars worth of construction projects because of a two-week-old AFL carpenters' strike, contractors in the four-county San Francisco Bay Area last week were hit by a second strike—by AFL pile drivers—and the threat of a third by construction laborers.

All three groups want the 15¢ interim increase, okayed by the CISC in mid-March, before they start negotiations on new contracts.

With 30,000 carpenters on strike and picket lines keeping 70,000 other building trades workers from their jobs, the contractors' problem became acute when 600 pile drivers walked out, affecting highway and bridge jobs in Northern California and Nevada.

Meanwhile, bay area Lawyer Gardiner Johnson warned individual contractors against signing supplemental agreements, circulated by the carpenters' union, granting an immediate 15¢ hourly wage increase to the striking AFL carpenters.

In a legal opinion, Attorney Johnson listed the criminal and civil penalties which might face contractors who sign the agreement—a direct violation of the CISC, says Johnson. The commission requires that wage increases be negotiated by customary bargaining agencies in the area and are subject to WSB approval. The carpenters demand an immediate boost, calling employers to place in escrow an amount equivalent to 15¢ an hour for each employee subject to the agreement.

Settlement doesn't settle

A $2 per day wage increase for the AFL Bridge and Structural Iron Workers Union which was granted today by the Building Trades Employers Association is expected to set the pattern for other building trades in the Cleveland, Ohio area.

No sooner was the ink dry on the contract signed with the steel workers than representatives from the trades which had previously signed for an increase of 17½¢ per hour demanded that their contracts be revised to include the same rate as the steel and iron workers.

• **Greater Kansas City**—Five major crafts representing two-thirds of the commercial construction workers in the Greater Kansas City went on strike this week.

(*Continued on next page*)

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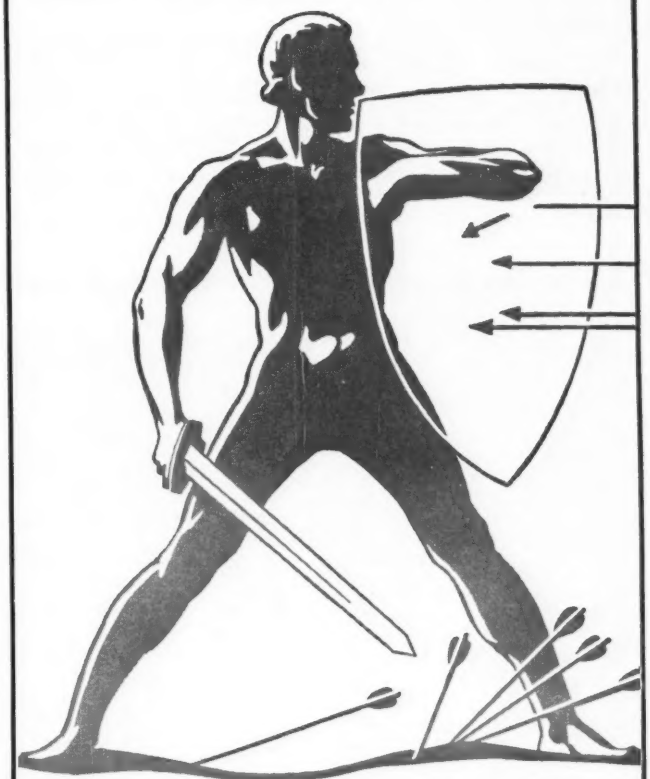

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Labor . . .

The strike followed a deadline set during negotiations with the Builders Association of Greater Kansas City. The negotiations collapsed when the 15¢ offer of the association was rejected by the unions.

The strike has shut down $50 million in projects because non-striking crafts will not cross the picket lines set up by the laborers, iron workers, cement finishers, construction truck drivers and hoisting engineers.

The cement workers had settled their strike on March 18, but are now back on strike.

Confusion compounded

In Milwaukee, Wis., a four county tie-up of the construction industry has been threatened by the AFL common laborer's union. Basic disagreement is in the interpretation of WSB's formula.

The laborers want 25¢ an hour increase in wages plus a 10¢ an hour welfare plan. Spokesmen for the union have indicated that they are prepared to settle for 15¢ an hour plus some welfare plan contribution.

The employers (Building Trades Employers Association) have offered an increase of 7¢ an hour plus a welfare plan conditional on joint participation by the seven basic building trades.

The disagreement arises in interpreting WSB's 15¢ wage and 7½¢ welfare fund formula.

The employers interpret the formula to read that the 15¢ increase applies only to workers who have received only the 10% catch-up rise permitted by the board in 1951.

BTEA spokesmen point out that Milwaukee building trades got a 12.23% cost-of-living rise in 1951 and conclude that they are not entitled to the full rise. They contend that the 7¢ they are offering will take care of a 6% rise in the cost of living since the last increase.

WSB outlines approved health and welfare plans

Over the signature of Nathan Feinsinger, chairman of the wage stabilization board, the regulation concerning health and welfare funds has been made official. (ENR March 20 p. 23).

The regulation, known officially as Regulation No. 2 of the Construction Industry Stabilization Commission, sets up the method by which new plans may be started. The regulation also describes what sort of plan it will approve.

Except in some special cases no employer may make payments or increase his present rate of payments without prior approval by CISC.

Standards for approval

If there is no danger of inflation, the commission will approve employers contributing 7½¢ an hour for each hour worked by employees in the jobs covered by the plan provided:

(1) That the coverage is limited to employees, retired employees, their spouses and children under 19.

(2) That the benefit payments are limited to one or more of the following temporary disability, hospital expense, surgical expense, medical expense, term life insurance and accidental death and dismemberment benefits.

NATHAN FEINSINGER, chairman of the Wage Stabilization Board, made CISC rulings official.

Approval of agreements

If the parties want to start a health and welfare fund before the establishment of a plan they must obey the following rules:

(1) Have a written agreement.

(2) Pay only to a depositary or trustee.

(3) Use the fund solely for health and welfare benefits.

(4) Make sure that the money cannot revert to the employer.

(5) Establish the plan within 12 months of starting a fund.

(6) Submit disagreements to final and binding arbitration.

Larger payments—The commission will consider plans which carry greater contributions than 7½¢, but will only approve of them under exceptional circumstances.

Effect of approval

A plan which has been negotiated by the customary bargaining agents of the area will set a pattern for other employers in the area. These other employers can join the plan merely by contributing to the same fund.

Health and welfare contributions will not be charged against approved wage increases.

As long as no increase in contributions is made, health and welfare funds in operation before Jan 25, 1951 can be continued or renewed.

(*Continued on page 32*)

Benefits definitions

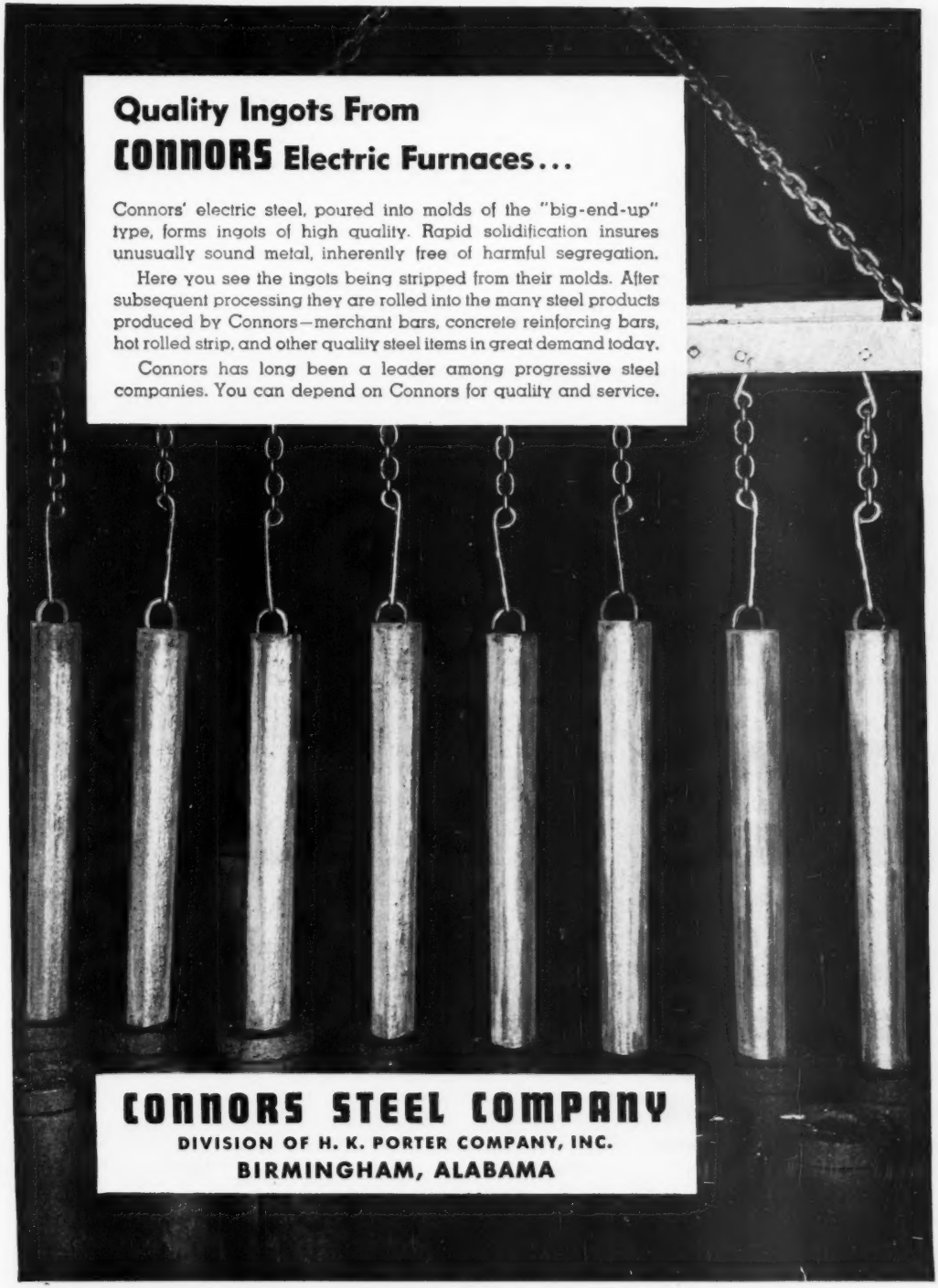
TEMPORARY DISABILITY: A cash benefit which pays an employee for wage loss while disabled by an injury or illness not paid for by compensation. The benefit may be paid whether or not the employee is hospitalized. Even if the employee gets compensation a benefit may be paid to bring his pay up to a higher level provided for in the plan. Paid sick leave is not temporary disability benefit.

HOSPITAL EXPENSE: Partial or complete payment for a noncompensated injury or illness which pays for hospital room and board (but not for private accommodations). The plan may also provide payment for extras such as X-rays.

SURGICAL EXPENSE: Partial or complete payment for noncompensated surgical expense—including obstetrical charges.

MEDICAL EXPENSE: Partial or complete payment of medical charges not covered by compensation.

GROUP LIFE INSURANCE AND ACCIDENTAL DEATH AND DISMEMBERMENT BENEFITS: Death benefits provided on a term basis (no cash surrender, paid-up or non-forfeitable loan values). Accidental death and dismemberments benefits. Payments for accidental loss of life, sight or limbs. Permanent and total disability benefits not to exceed the face value of the policy—apparently eliminating double indemnity.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Labor . . .

Builder agrees with WSB, pays light penalty

A third building contractor has been assessed financial penalties by the Wage Stabilization Board for paying above-ceiling wage rates.

Burns Construction Co., one of the largest home builders in Denver, agreed to disallowance of $4,618.84 of its payroll as a cost for income tax purposes. Frank L. Cowton, company president, admitted paying above-legal rates to bricklayers and hod carriers and consented to the penalty imposed by WSB's Regional Enforcement Commission. At the time charges were filed, Cowton denied any knowledge of violation (ENR Mar. 13, p. 44). He felt the higher wages were permissible on the basis of merit and promotions under WSB Regulation No. 5.

Total wages paid in violation of the controls law—all of which could have been disallowed as costs in computing income taxes—came to $25,660.37. In consideration of extenuating circumstances, however, WSB's regional enforcement attorneys accepted—and the quasi-judicial regional enforcement commission approved—a settlement of $4,618.84. This is the amount of wage overpayment made by Burns in paying bricklayers $3.25 to $4 an hour (when the legal rate was only $3) and paying hod carriers up to $2.25 (when the legal rate was $1.85).

The violations occurred from March to May of last year, before the construction industry stabilization commission had set legal area rates. WSB officials took this fact into consideration, as well as the contractor's "cooperative spirit" and the national enforcement commission's ruling two weeks ago on the appeal of J. D. Hedin Construction Co. (ENR Apr. 17, p. 25).

In the Hedin case—also involving overpayments to bricklayers—the national commission modified the Detroit regional commission's finding to this extent:

- It eliminated the penalty of trimming $40,000 off the price of the hospital Hedin was building for the Veterans Administration at Ann Arbor, Mich.
- Instead of $40,000 cost allowance for income tax, it disallowed only the overpayment from the beginning of the violation until July 25, 1951, when area wage rates were set; and half the bricklayer payroll from then until the violation ended in November. The total disallowance came to $37,784.

Hedin's attorneys consider even this penalty excessive and are planning further appeal to the WSB itself and, if necessary, to the courts.

Judge Edward C. Day, chairman of the Denver commission, said he considered the findings in accordance with those made in Washington against Hedin. It also appears to be in line with the yardstick laid down by Economic Stabilizer Roger L. Putnam in General Order 15 issued Apr. 5 This states that, even where extenuating circumstances exist, the normal penalty should be disallowance for tax purposes of at least the excess part of the wage payments.

- **Third violator**—The third construction violation case is partly responsible for the new Putnam order. It involves Young-Loftus Construction Co. (ENR Mar. 20, p. 42).

WSB's Regional Enforcement Commission at San Francisco, approved a settlement of $1,340 for the payment of above-ceiling wages to carpenters and apprentices on the construction of a housing project at La Mesa, near San Diego, Calif. This was only three-fourths of the $1,787 excessive wage payments. Total payroll in violation was $9,171.

Inter-trade fights plague construction

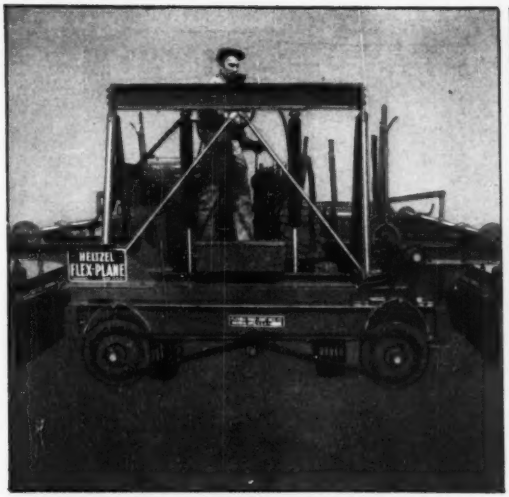
Jurisdictional disagreements were high-lighted by disputes between boilermakers and iron workers in widely separated parts of the country.

A dispute between the two trades tied up for two days construction of the multi-million dollar U. S. Steel plant near Morrisville, Pa. The strike had kept over 7000 construction workers off the job.

The dispute arose over who was supposed to construct catwalks and staircases on two blast furnaces being built by their employer, a Cleveland firm. The argument was submitted to arbitration.

At Paducah, Ky., work on the nearby atomic-energy plant was halted when boilermakers protested an assignment of rigging work to ironworkers.

Ironworkers threw picket lines up at the Union Electric Co.'s new $45-million power plant near St. Louis.



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If you are thinking of a finishing machine it will pay you to get the facts on the Detroit Special. Movies, literature and technical assistance available without obligation.

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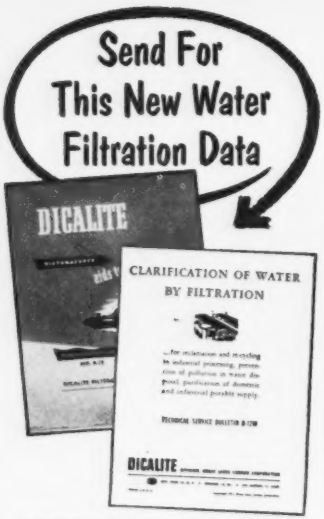

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NORTHWARD STRETCH of the expressway. Heavy steel fence is to prevent crossing into the opposite lane of traffic. Lighting along expressway has high illuminating factor.

Expressway progress to halt as building funds run out

Atlanta's super expressway is out of funds and unless a new bond issue can be sold soon to construct the vital downtown connecting links, traffic will continue to crawl at a snail's pace during the rush hours.

Contracts for the outer routes into the city have been let and a large portion of the entire expressway has been completed. Work is progressing on some contracts but all available funds have been used up.

Sam P. Allison, state highway engineer for the expressway projects, says that work will halt after letting of one more contract unless new bond funds are made available. And no federal or state urban highway funds will be allotted to expressway construction during 1953 if bond funds are not forthcoming.

Proposal is for a $10-million bond issue which will about cover presently designed work on the North-South Expressway. This includes the downtown link which passes through the business section of the city. Costs will be high on this stretch, about $10 million. The route will require a series of underpasses and bridges together with extensive shifts in utility installations.

Part of the expressway is now opened to traffic and the south leg connecting with Highway 85 will soon be completed, relieving traffic congestion at that end.

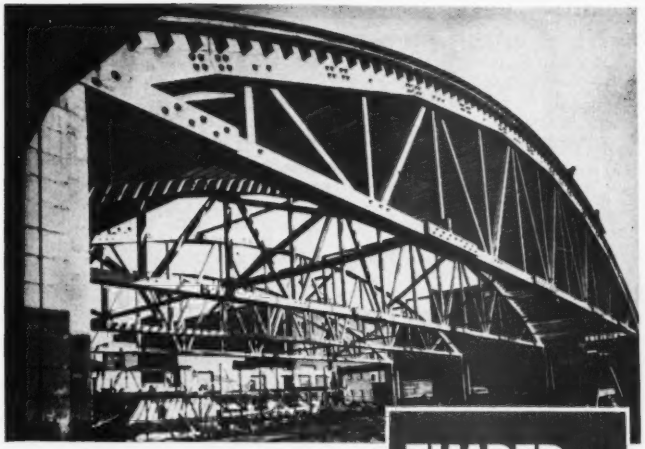
While the public has waited patiently during construction of the expressway there is growing restlessness. It may mean that the public will demand that additional funds be provided to hurry up the project and relieve traffic congestion.

This impatience is not well founded, says Harry W. Lochner, president of Lochner & Co., Chicago, who prepared the extensive development plans in 1946. Lochner says that visits to other cities shows that Atlanta's progress is impressive considering the limited funds available.

• **Work done**—Ten miles have been completed, or will be soon. Six more miles are yet to be done, including the downtown connector, the northeast and northwest legs, and the southwest leg to the airport. This

(*Continued on page 36*)

NORTH-SOUTH expressway. This section is progressing into the heart of the business district. The northerly section is completed, southern connection is not.



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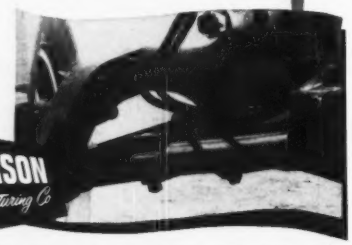

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We built the above pre-stressed "GUNITE" tank in 1944. It is 90' in diameter with a water depth of 25'. The wall and dome roof of this tank are all "GUNITE". This is just one of scores of similar tanks designed and built by us. We will be glad to discuss your tank needs with you and submit designs and estimates for your consideration. Our method of pre-stressing the hoop rods in the wall and in the dome ring assures a bottle-tight and crack free reservoir. Our 64-page bulletin A2400 describes this method of construction and also scores of other profitable uses of "GUNITE". A copy will be sent free upon request.

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Municipal . . .

work is estimated to cost about $14 million. The first ten miles cost $28 million.

Col. Moses Cox, former state highway engineer, is engineer-secretary of the joint Atlanta-Fulton County bond commission, and Col. Garland Steele is liason engineer for the city. All plans have been drawn by the Georgia Highway Department.

• **Design problems**—Big problem in designing Atlanta's expressway was crossing the many streets which grew up from trails and wagon roads.

Many of Atlanta's streets are narrow and follow contours without making a definite street pattern. In some instances this creates confusion for drivers unfamiliar with the city.

It was to alleviate this situation that the expressway plan was formulated.

There are six main highways coming into the city like spokes of a wheel. Traffic congests at the hub, the downtown business section. Completion of the expressway will allow for upwards of 55 mph traffic through the heart of the city.

• **Right of way**—One of the big expenses of the expressway has been the cost of right-of-way. This is especially true of the downtown section. Delay in construction is now blamed on slow land acquisition. In one instance this will delay a portion one construction season.

It is estimated that land acquisition will run 40% of the cost of the entire Atlanta expressway project. When plans were first drawn in 1946 it was estimated that the project would cost about $48 million. Now it is estimated that the cost will run as high as $60 million.

• **Highway design**—The north portion of the expressway was started first with concrete roadways used. Asphalt was used on the bridge ramps because of the savings in cost. Subgrade treatment of 6 to 8 in of stone screenings was used under both asphalt and concrete. Asphalt, used on the south portion, has a subgrade treatment of 6-in soil–bound macadam base, 3-in penetration, 2½-in binder and 1½-in top.

The concrete portion of the expressway has a treated subgrade with 8 in of concrete.

There will be 41 bridge structures and one pedestrian overpass.

All intersecting streets have been dead-ended where it would not interfere with the flow of main traffic.

• **North-South Expressway**—It is estimated that completion of the north-

south section will cost between $13 million and $15 million. Plans are now being drawn and chances are that a bond issue will be approved for its construction. When completed this will give a freeway from Cobb County line to the Clayton County line and from U. S. 23 on Buford Highway to Clayton County. The distance through the city will total 18 miles.

At present there are 11.4 mi under contract at a cost of $10,335,000. Grading has averaged between 700,000 and a million yds per mi on the four and six lanes of highway. The main highway is of six lane construction with four lanes at each end.

Officials of 2 cities face fines and jail

The case of 10 city officials of Vernon and Culver City, Calif., cited for contempt of court, two years ago because their cities failed to contribute to Los Angeles' $49-million Hyperion Sewer Project, has reached what may be its next-to-the-last stage. Last stage: fines and jail sentences.

The Superior Court Judge who made the contempt ruling—Joseph W. Vickers—has just ruled against the 10 in a re-hearing. He ordered the sheriff to jail them for five days and collect $500 each. But before this was done, the ten filed for a review by the State Supreme Court and got a restraining order against execution of the sentence pending the Supreme Court's decision.

The Supreme Court has twice sustained the judge's original ruling.

The contempt citation came in 1950, four years after Judge Vickers had ordered Vernon and Culver City to contribute to the hyperion project. Los Angeles and surrounding communities tied into its sewage system had been ordered by the state to construct a treatment plant and a mile-long marine outfall to remedy unsanitary conditions around the former screening plant.

Following the contempt ruling, both cities voted bonds to pay their share. Vernon has paid $1,849,585.57 plus $83,450.21 interest, and Culver City has made arrangements to pay $1,371,100.

Judge Vickers ruled that these facts haven't changed the original grounds for a contempt citation. The 10 officials—mayors and councilmen—argue that the original order has been complied with, and that in any case they were acting not as individuals but as members of their respective municipal bodies.

The cities themselves were each fined $500.

(Continued on page 39)

How Much Does *Instant Communication* Mean To Your Business?

Control On the Dashboard—On black-topping, fill and sewer work, plus sand and gravel operation, General Electric radio system cut Steven Kravec's travel time in 3 counties by 50%.

RUNS 8 JOBS WITH G-E 2-WAY RADIO

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● **New Angle on Time-Saving**—Kravec leaves his home at 6 AM and drives directly to job sites, talking by radio to his office on the way. This saves him 1½ hours of work time each morning. Equipment breakdowns on the job are handled quickly with repair instructions relayed by radio.

● **Pays For Itself**—His complete G-E radio system cost Kravec less than $2500. He reports it paid for itself in the first 3 months, has been a profit-maker ever since. Information on this and other types of industrial radio may be obtained from the Communications Man in the G-E office near you. Mail coupon below for *free* bulletins.

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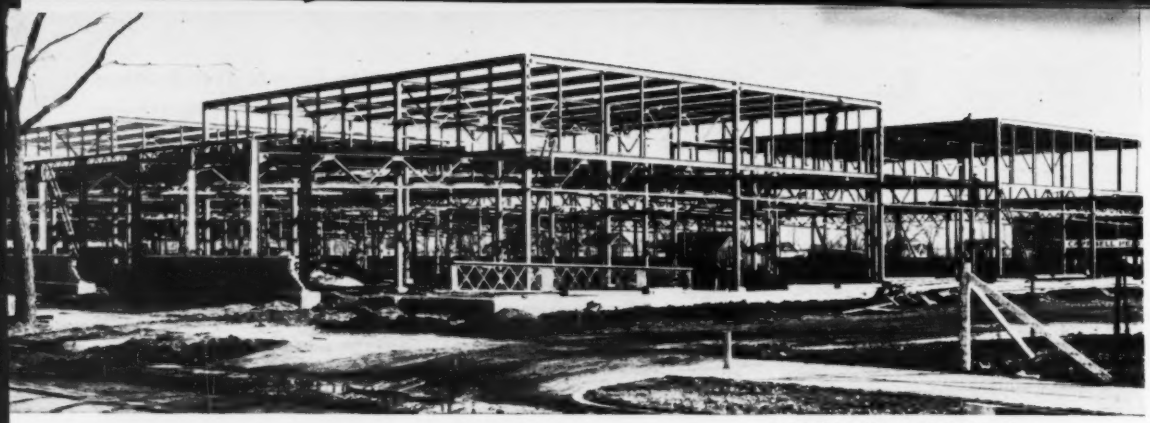
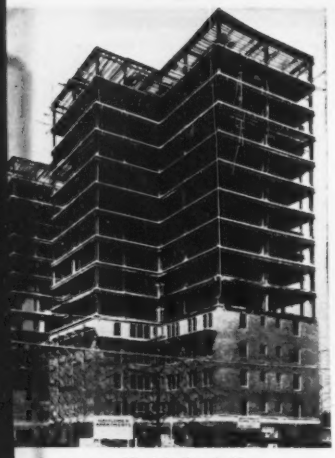


Exposition Buildings, Des Moines, Iowa



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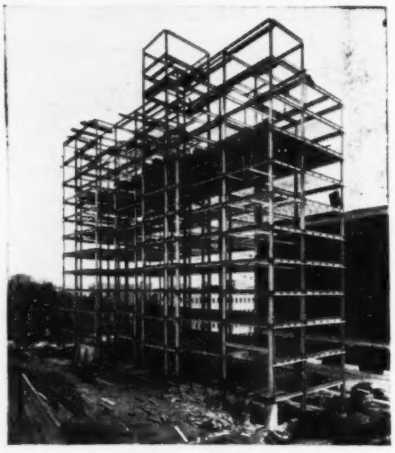

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PROBLEM BREEDER is this Chrysler tank plant bringing boom to Newark, Del.

Boom brings problems

The once quiet college town of Newark, Del., just a few miles south of Wilmington is a striking illustration of how an industrial and construction boom brings municipal problems in the wake of the flood of gold.

Some $20 million in projects including the giant Chrysler Delaware tank plant, the duPont office building, and the new duPont laboratory are being built together with the University of Delaware's own building program.

Thousands of construction workers throng the five-block Main St. business district spending much of their big pay checks in the local stores.

Business men smile at the continuous ring of cash registers and have come to look upon the cashing of $200 checks as a routine affair. Real estate is sky-high with building plots that once brought $200 an acre now selling for as much as $1,000.

About 3,500 new homes are to be built and the start of construction of these has brought more construction workers into the area to increase the golden boom.

• **Permanent payroll**—But the full impact is yet to come. When the various projects are completed some 4,000 permanent employees will be on the payrolls that will run somewhere about $15 million a year.

Not everyone is in ecstacy about the financial windfall. It has brought problems, big and small, to municipal officials. The story of how they are meeting problems is being duplicated throughout the nation.

• **Newark**—Newark is a city of 8,000 in rural New Castle County. It has operated in the black for many years, a point of citizen pride.

In 1951 Newark's surplus was $38,000, but with the new facilities that the boom makes necessary the surplus days appear over. New facilities requiring millions of dollars must be constructed. Citizens can now expect increased taxes.

J. Francis Neide, the city supervisor (corresponding somewhat to city manager), is an engineer and the active directing executive of the city. On his executive and engineering skill the city is dependent for quick and not too expensive solutions of its boom problems.

• **Solving problems**—Neide says, pointing to Main Street jammed with vehicular traffic, that the traffic problem must be met as soon as possible. His solution: A beltway around the city to be built with aid from the state and county.

Money is needed for water and sewer facilities, extension of electric facilities, roads and other municipal needs. His solution: A bond issue of $3 million.

Neide said the sale of electric power has helped make possible the low city tax rate of 30¢ per $100 on a 70% tax assessment. But the tax rate is headed up, he says.

The tremendous population increase will require extensive additional school facilities.

The Delaware State Board of Education has provided $1,817,000 for school construction in 1952-53. As the state bears 95% of the cost of education in Delaware, any increase in the 25¢ per $100 assessment, will be slight.

• **Main Street happy**—But on Main Street the problems the boom is bringing to the municipality appears to be of small concern to business men who are busy reaping a green harvest.

Rents are high and housing is tight.

Bank deposits are soaring with hundreds of new depositors listed within the past year.

If business men have any complaint it is that many of their employees have quit to take better-paying construction jobs.

• **Construction and after**—The Chrysler plant which has highlighted the multi-million dollar construction program totals a million sq ft in five buildings and is less than a mile from the center of town. The huge duPont office building contains some 600,000 sq ft.

Some 700 persons are employed at present at Chrysler and 3,000 more will be hired within the next year. While not all the personnel to be employed at the plants under construction will reside in the city limits of Newark, considerable numbers are expected to.

• **Before boom**—Many of the city's residents are not happy with the boom. They prefer the quiet streets shaded by old lindens, elms and sycamores without the traffic snarls

(*Continued on next page*)

PROBLEM SOLVER (for housing) is development like this on South College Ave.

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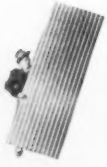


Only 56 pounds per square! Less time and money spent in handling and erection. Less dead load on building.

ALCOA
INDUSTRIAL
BUILDING SHEET

Municipal . . .

and noises that have come with industrial expansion.

The city had fiber and paper mills and vegetable packing plants that adequately supported its economy. Added to that was the trade of the faculty, student body and employees of the University of Delaware, which now has 1,800 full-time students.

Last summer Newark, by a vote of the electorate, added outlying areas and quadrupled its size to 5 sq mi. This changed its municipal status, under Delaware law, from that of a town to a city.

"This boom is good for business," says engineer Neide, "but it has given us major problems both immediate and long-range."

City and railroad fight as expressway is stalled

Stalemated negotiations between the state of Pennsylvania and the Baltimore and Ohio Railroad are delaying construction of the downtown link in Pittsburgh's ambitious Penn-Lincoln Parkway.

The parkway is designed to bring west-bound traffic quickly into the heart of Pittsburgh via an express boulevard. The entire stretch from Routes 22 and 30 outside the city to the east is virtually complete except for a single downtown section.

The state's highway department and the railroad are reported to be more than $100,000 apart on a proposed price for the B & O station which sits on river front ground needed for the project.

A member of the conference said the railroad originally asked the state to pay for construction of as many sq ft in the proposed station as the old station had.

Representatives of the B & O stated that the state had not made an acceptable offer for the station.

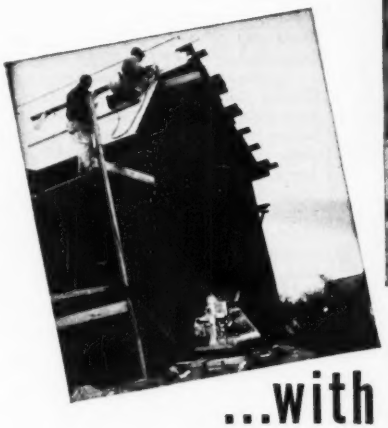
The railroad claims that engineering problems remain to be solved, especially the problem of moving the trackage without disrupting traffic.

An engineer for the state said that the engineering problems have been satisfactorily solved. The state has been able to condemn almost all the properties along the desired right-of-way when owners refused offers, but B & O posed a different type of problem.

The railroad's right to the land is as strong—and perhaps stronger—than the state's. Theoretically, some sources say, the city can cancel the railroad's lease to the property on which the station stands. But the B. & O. still would hold the trump card as far as

(Continued on page 42)

Get Greater Efficiency from Power Tools



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Municipal . . .

trackage outside the station is concerned.

A city official indicated the city would cancel the lease if requested by the state.

Pasadena clears slums without federal money

Pasadena, Calif., is in the middle of a cut-rate, homegrown slum-clearance program relying on existing departments, voluntary cooperation of property owners—and no federal funds.

The program, which to date has cost municipal taxpayers a little more than $1,600, is getting results. A total of 4,200 inspections have been made—covering about 40% of the city's "blighted" areas; 1,450 structures have been ordered demolished or altered, and 726 of the jobs have already been completed by the owners.

"Operation junkyard"—as the Pasadenans call it—had its inception two years ago when the Board of City Directors decided something should be done about the unsightly parts of town. Pasadena had less of them than most cities of its size (pop. 106,000), since it ranks sixth in the country for per-capital spending power; but they ranked civic pride all the more for that.

Under the direction of economy-minded City Manager Don McMillan, a survey was carried out, and in early 1951, the City Planning Commission prepared a report. The report showed that slum-like residences were scattered through a 197-block area, about 10% of the city's total. No particular neighborhood could be called entirely substandard, and therefore any wholesale demolition and rebuilding would destroy many respectable residences.

• **Solution**—The solution, the Pasadenans decided, was to get property owners to do their own "slum clearance." They felt that strict enforcement of existing building, fire and health codes, plus appeal to the civic and personal pride of the owners, would do the job.

Judging from results, they were right. Here's how it works:

Heading the program is Walter Zuetell, Pasadena's building superintendent, who serves as permanent chairman of the Clearing and Coordinating Committee on Housing. The committee includes all city department heads directly concerned with the problem.

Inspectors from the building, health, and fire departments, working as a team, began a systematic going-over of the 197-block area. (They are regu-

lar inspectors; one stenographer is the only additional help hired.) Zuetell estimates they've been spending, since May of 1951, an average of 72 man-days total per week. They've made 2,400 original inspections and 1,800 return visits to check on results.

When they find a rundown house, collapsing shed, falling fence, or junk-filled yard, or any other unsightly and usually illegal condition, a personal letter is written to the owner of the property. He is told what the trouble is, told what city ordinance or state code is violated, and given 30 days to remedy the situation.

After 30 days another inspection is made. If the condition has not been taken care of, another letter is sent the owner, giving another 30-day period of grace. After that, theoretically, comes court prosecution.

• **Results**—But to date no prosecution has been necessary. The citizens have co-operated, says Zuetell, "in really amazing fashion."

So far only 96 of the city's 39,657 dwelling units have been ordered torn down. These were shacks or rundown converted garages. Only six cases had to be turned over to the city's welfare agencies; the other 90 families found better living quarters themselves.

When the owners fix up their property according to specifications, a personal letter of appreciation is sent them. Zuetell thinks it's this personal approach that has elicited such excellent cooperation. Even when no laws—except aesthetics—were being violated.

Zuetell estimates it will take another year to complete the clean-up job. And after that—Pasadena is determined that strict enforcement of the laws will see to it that no further blights get the chance to develop.

Settlement made by city sued for sewage nuisance

The city of Durham, N. C., has just settled for $35,125 eleven suits seeking damages totaling $148,500. The suits were instituted several years ago by residents of lands adjoining Ellerbee Creek who claimed overflow of sewage into the creek from the Northside Disposal Plant constituted a nuisance and damaged their health.

At the same time, the court dismissed a case in which the city in 1951 was cited for contempt of court for not correcting conditions complained of. The city agreed to adopt techniques found "feasible and approved" by engineers in remedying the conditions.

The judgment gives the city permanent easement for operating the disposal plant and bars similar suits.

(*Continued on next page*)

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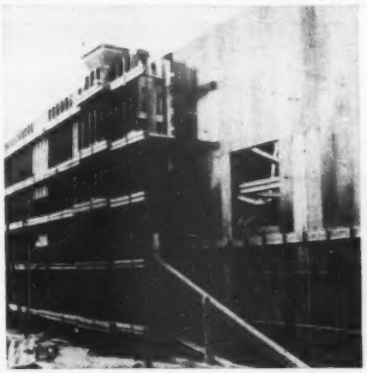

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Municipal briefs . . .

• **Annexing battled**—Plans to annex 120 sq mi surrounding present city limits of San Antonio met strong opposition from portions of the area to be annexed. A spokesman for the dissenting areas suggested the city annex the area gradually as it is able to provide fire and police protection and garbage pick-up service. Meanwhile, eight groups have filed petitions for separate incorporation.

• **Priority paving plan**—In Boston, a proposed five-year master paving plan would organize repaving in the Hub City. Designed to tell city officials work to be done in order of priority, the plan will make recommendations for widening Boston streets, examination of bridges and an outline of improvements on streets to connect with state-built arterials. This year, Boston will spend $2.5 million for street and sidewalk repairs.

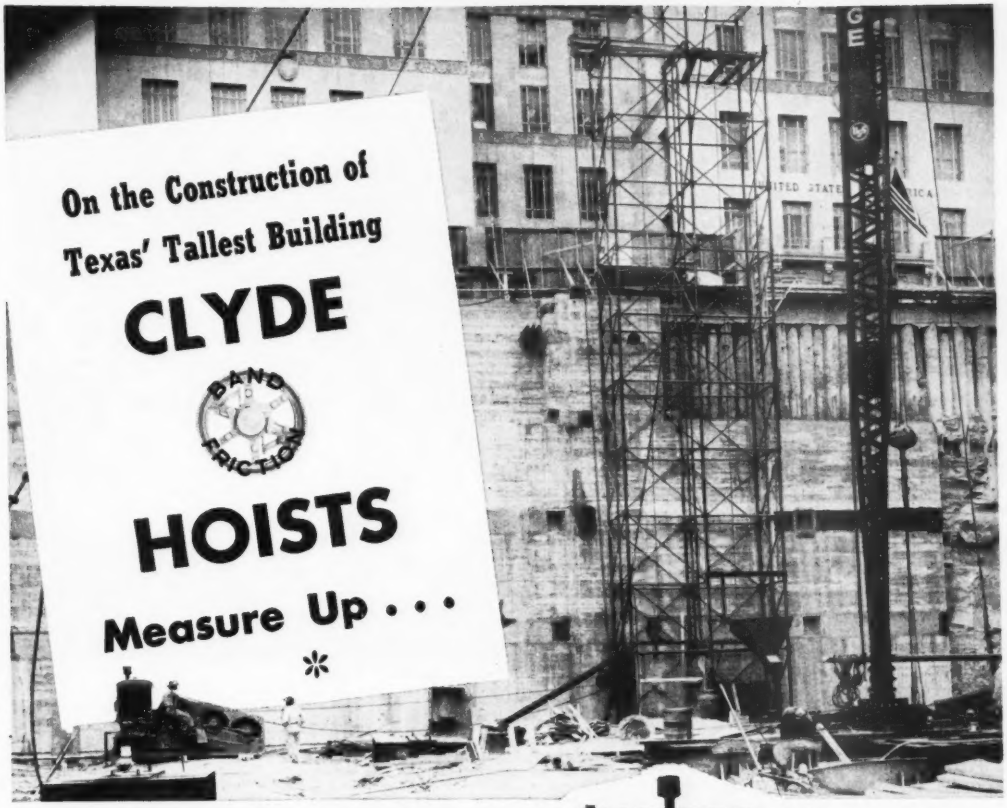
• **Off-street parking**—Development of off-street parking facilities by private enterprise has been given the nod by Wilmington, Del.'s newly-created Parking Authority. The authority hopes to stimulate private enterprise to undertake construction of the facilities, possibly financing them with tax-exempt bonds.

• **$11 million for improvements**—Cost of financing proposed over-all improvements in Greenwich, Conn., during the next eight years has been estimated at $11.5 million by the chairman of the Board of Estimates and Taxation. A school building program will cost $4.2 million while another $6.6 million will go for additional capital improvements. Financing on the town's modified pay-as-you-go plan would average $1.5 million a year.

• **Fund surplus quandry**—An estimated $500,000 surplus in the Hartford, Conn., city treasury has been credited as revenue in the 1952-53 fiscal budget by City Manager Carleton F. Sharpe. What to do with the surplus has become an annual battle. Hartford's corporation counsel believes that any surplus in excess of the estimated $500,000 could be used for city employee salary expenses, however the council can't spend that excess until Sharpe and the city finance director recommend such action.

• **At long last**—Climaxing a 117-year argument, Winchester, Mass., has voted to proceed with a $4-million grade crossing elimination in the center of the town. The first article for elimination of the railroad grade

(*Continued on page 47*)



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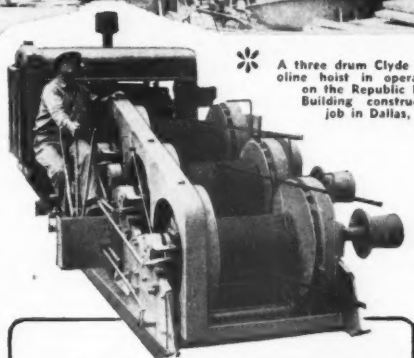

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Municipal . . .

crossing was submitted to town meeting in 1835.

• **Relocation aid given**—Aid for a Louisville, Ky., plan to eliminate grade crossings in city and county has been approved by the State General Assembly. One measure removed the $5-million ceiling on amount of bonds to be issued for elimination of crossings. The second proposal clears the way to include relocating of railroad tracks in the over-all cost of grade separation. Relocation costs will be split 85% for the city and 15% for the railroad.

• **Memphis gets NPA grants**—Industrial plant materials and machinery totaling $20 million have been allocated for Memphis in the second quarter of 1952 by the National Production Authority. Largest allocation, $17 million, went to E. I. duPont Co. for its Woodstock plant, scheduled to open July 1.

• **Sinclair move approved**—In Memphis, Sinclair Refining Co. received federal approval to become the first occupant of the new Presidents Island harbor development project. The Defense Production Administration, announcing its approval of the $400,000 project, included a certificate permitting rapid tax writeoff of $165,000 of the cost. Negotiations are still underway with the Memphis and Shelby County Port Commission and city and county governments for purchase of a 10-acre site 2,000 ft below the dam across Tennessee Chute. Sinclair plans to begin construction within 30 days after its purchase contract is finally approved.

• **Air pollution**—The Los Angeles county air pollution control district took the occasion of its fourth anniversary to note that 530 tons per day of pollutants that once added to Los Angeles smog are now being collected or trapped. Smog Control Director Gordon P. Larson noted that the largest single abatement 300 tons of sulfur dioxide results from the sulfur-recovery program at oil refineries. Recovered material is being converted to commercial sulfur and sulfuric acid.

Better incinerators account for 80 tons of the total, and control devices in industrial plants collect some 60 tons per day. The district's war on unsaturated hydrocarbons only recently identified as air pollutants has already removed 80 tons a day in collection at refineries and tank farms. The district so far is stumped by the hydrocarbon emissions of the county's 2 million gasoline-powered vehicles.

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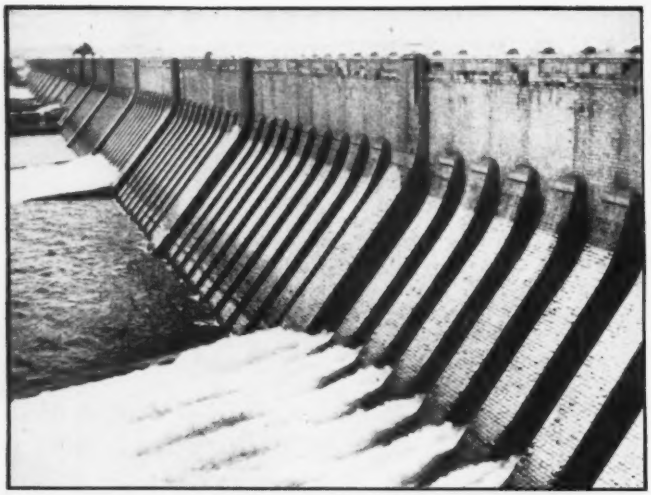


THE ASWAN DAM—From October to January this dam stores part of the annual flood to irrigate crops from February through July, when the Nile naturally runs low. It is also used occasionally for flood control. Installation of a hydroelectric power plant at the dam was authorized some time ago. Another dam for flood control, farther south at Merowe is proposed, while long-range storage of water for irrigation is projected at Lake Albert and Lake Tana.—Wide World Photo.

Political changes delay Egypt's plans for Nile power and irrigation

Changes in the Egyptian government are causing further delay in that country's pressing hydro-electric and irrigation plans, particularly the power project at Aswan Dam. There is objection in parliament because there is some fear that a hydro-electric station might endanger the structure or the reservoir, but an engineering investigation is being made.

Bids of upwards of $34 million for the main electricity plant had been received and a further $6 million for additional requirements. Many millions more will be needed for a fertilizer factory, but financing is impossible at the present time.

Preparatory civil projects at Aswan have already been carried out by French, Swiss, and Swedish firms at a cost of $18½ million. Others are waiting for approval of credits.

• **Irrigation plan**—A 4-year plan has been drawn up to obtain sufficient irrigation water for agricultural expansion since, despite the growth of industry in recent years, it is believed that agriculture will continue to be the main occupation of Egyptians. The minister of public works finds it imperative to embark on irrigation projects, both in the upper reaches of the Nile and in Egypt to increase the cultivated area from 6 million to 10 million acres. The large projects, which are all still under study, and depend upon political and international factors, are the establishment of a dam at Lake Tana in Ethiopia, another at Merowe (Fourth Cataract) in the Northern Sudan, and a third in the Wadi Rayan depression southwest of Cairo. Another important project is to reduce the quantity of Nile water lost in the Sudd marsh region in central Sudan.

Since the execution of these projects will take a long time, the government has decided to increase the present cultivated area by making use of the additional stored water, strict control over the distribution of the water now available, and by using flood water to increase the area planted with summer (low-flood) crops.

There is hope that when the Anglo-Egyptian dispute is settled, negotiations on further Nile River development will be pushed. The available waters of the Nile, on the basis of the Nile waters agreement of 1929, are apportioned between Egypt and the Sudan. At present the Sudan gets about one-thirteenth of the water, and Egypt the rest. The water is stored and diverted by a series of dams and barrages of which the largest are Aswan, Sennar and Jebel Aulia.

• **Need for water is desperate**—The Sudan is using up virtually its entire allotment of water and could use a great deal more. The Gezira Scheme, which is the mainstay of the country's economy, probably might be expanded by another million acres if additional water could be obtained. In Egypt the need for larger water supplies will be desperate in a few years if steps are not taken to put through conservation plans for the upper Nile.

• **Three dams required**—The Equatorial Nile Project alone will involve the construction of at least three dams —one at Lake Victoria to build up storage capacity and to provide electric power for Uganda; another below Lake Albert; and one or more regulating dams in that area. An important feature of this project would be the digging of a 130-mi canal through southern Sudan, where the White Nile, when in flood, overflows and spreads out over a vast area.

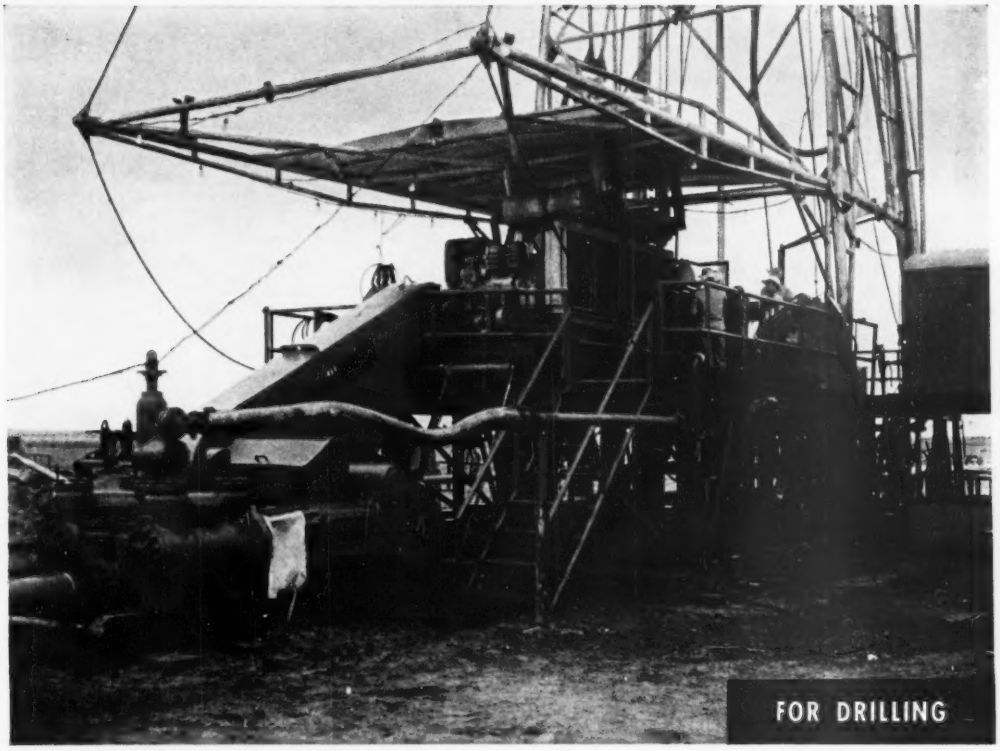
The Equatorial Nile Project will serve the double purpose of long-range and annual storage, to store waters in years of plenty for use in years of drought. It will also hold back the annual flood so that it can be used for irrigation when needed in Egypt and the Sudan. The only part of this project on which work has actually started is the Owen Falls Dam below Lake Victoria.

Plans are progressing for the Mt. Blanc tunnel

Additional information concerning the Mont Blanc tunnel has been revealed in Italian press reports, which assert that work on the great engineering project will start this summer.

The tunnel will start at an elevation of 4854 ft at the Italian end, near the village of Entreves in the upper Valley of Courmaveur. The maximum elevation of 5117 ft will be reached at the halfway point, and the tunnel will come out in France above Chamounix.

(*Continued on page 51*)



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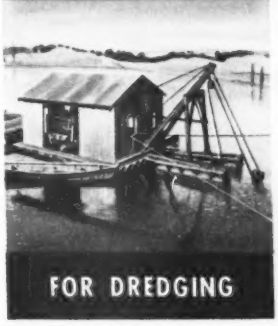

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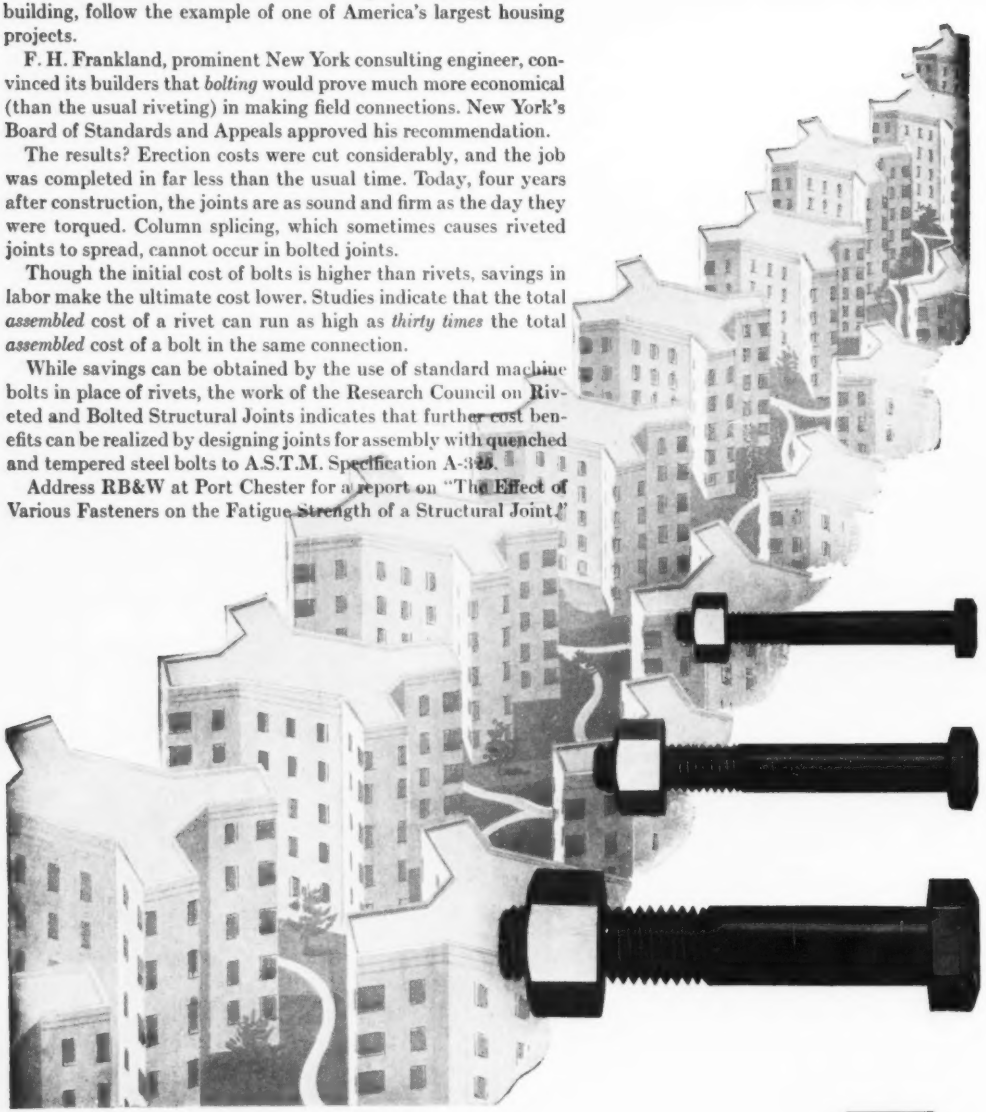
The results? Erection costs were cut considerably, and the job was completed in far less than the usual time. Today, four years after construction, the joints are as sound and firm as the day they were torqued. Column splicing, which sometimes causes riveted joints to spread, cannot occur in bolted joints.

Though the initial cost of bolts is higher than rivets, savings in labor make the ultimate cost lower. Studies indicate that the total *assembled* cost of a rivet can run as high as *thirty times* the total *assembled* cost of a bolt in the same connection.

While savings can be obtained by the use of standard machine bolts in place of rivets, the work of the Research Council on Riveted and Bolted Structural Joints indicates that further cost benefits can be realized by designing joints for assembly with quenched and tempered steel bolts to A.S.T.M. Specification A-325.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."



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The work will be carried on from both ends at the same time, and engineers estimate that at an average rate of 52 ft a day can be maintained. The tunnel will be about 11 miles long and the roadway 27 ft wide and 19 ft high, with a narrow sidewalk along one of the sides. Every 164 ft there will be a niche in the wall to shelter motor vehicle making a forced stop.

The cost of building the tunnel is estimated at $20 million. The company to operate the tunnel will have its offices in Geneva. Engineer Lora Totino of Turin, Italy, who built the cableways in the western Alps, has undertaken to form the company and build the tunnel. The design is by Prof. Zignoli of the Polytechnic of Turin.

The Italian and French governments will each provide for financing a quarter of the cost, and the other half will be supplied by French and Swiss financiers from the Val d' Oasta and the Canton of Geneva.

TEMPORARY STONE BARRIER—This is the preliminary stage of the work of closing the breach in the bank of the Po River.

Engineers work to prevent future Po flood damage

(McGraw-Hill World News)

The preliminary stage of the works for closing the 700-meter breach through which the waters of the Po River flooded a whole province last summer, have been completed. The barrier built is a provisional one, formed of stone, delivered by the collapsible caissons of 350 auto-trucks. For the time being, the overflow of the waters of the Po in the Polesine district has been stopped but in the spring, when the thaws begin again to swell the river currents the water will again overflow these improvised levees. It will take eight months to rebuild the new levees equal to those that were destroyed.

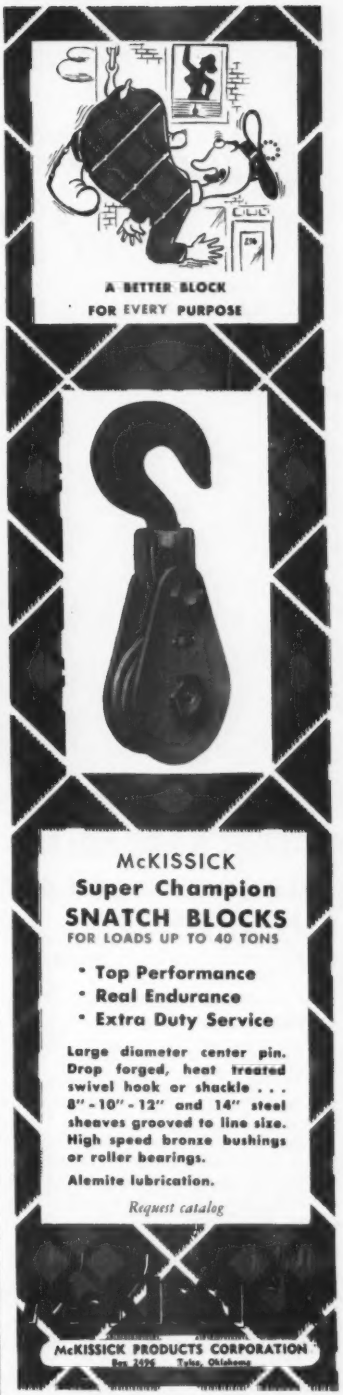
For the present, the Italian government has allocated only $1 million for the temporary closing of the leaks, but it will require not less than $10 million to rebuild the levees that were destroyed, and experts reckon that $300 million would be needed to put in good order all the levees of the Po from Piacenza to the sea.

The Italian Ministry of Public Works has not yet made any decision. Some believe it might be a vain labor to restore all the levees. For a stretch of not less than 30 miles during the seven hours that preceded the collapse of the embankments at Occhiobello, thousands of witnesses saw the levees on either side of the Po quiver and shake as if they had been made of rubber.

Some engineers say that to strengthen the levees at Occhiobello might only lead to breaches elsewhere on the occasion of another flood, and moreover, that an outlay of $300 million is too heavy for the limited resources of the Italian treasury.

The waters that overflowed at Occhiobello have already formed a new channel through Adria, and the narrows between the Adige and the Po, which empties into the delta of the river. Instead of closing hermetically the breach at Occhiobello, it is thought wise to build a large channel provided

(Continued on next page)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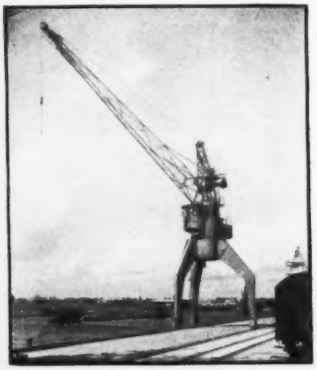
with a lock that would allow of discharging, at a rate of 1,500 c.m. per second, the overflow of any future disastrous flood. The waters would flow through a canal.

While these discussions are being carried on, 185,000 acres of land in the district of Polesine, nearly 50% of the flooded area, are still under water, and the area that has been dried is covered by a layer, from a few inches to six feet deep of residue left by the Po, and it will probably be years before the land is again fit for cultivation.



3-LEGGED CRANE—This type of crane used for harbor work at Bremen, Germany, has a maximum carrying capacity of three tons.

New type of crane installed at Bremen

A new type of crane has been installed in the Bremen harbor by the German firm Demag A.G., Duisburg.

The crane has a maximum carrying capacity of three tons at a radius of 20 meters max. and six meters minimum. Total hook lift is 36 meters; the highest position of the lifting hook above the top of the rail is 21 meters.

The three crane legs are of trapezoidal section. Each leg is welded from two plate strips bent into U-shape, with two plate ac fillers in between. The lower vertical section of each leg is filled with concrete to obtain the required stability. For safe transmission of stresses, a diaphragm is inserted at the bend point; plate panels of the upper inclined sections are provided with suitable stiffenmg members to provide the necessary buckling strength in spite of the 5 and 6 mm. thin plates.

Revolving speed is so rated that the crane performs two revolutions per minute. Hoisting speed is 40 meters per minute with a three-ton load.

(*Continued on page 54*)

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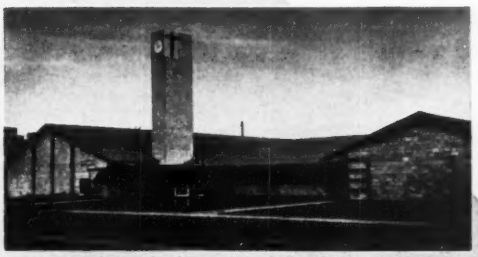
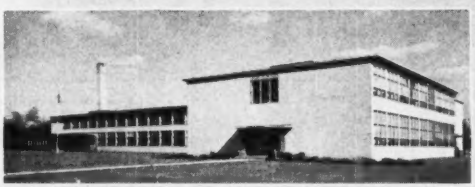


More and more churches are being built with Vibrapac block.



School building with interior and exterior exposed Vibrapac block.

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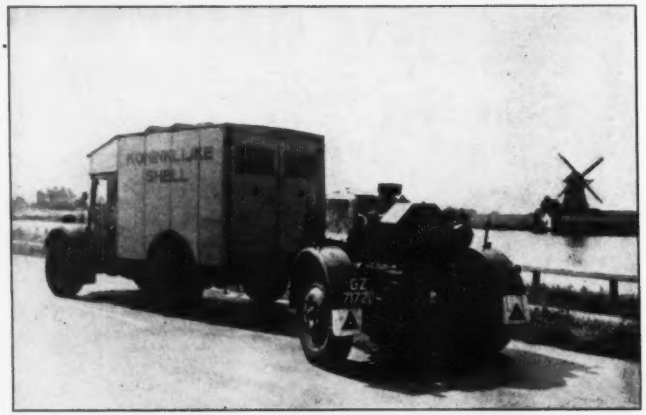

Dutch develop vibrator for road work

Highway engineers in Holland are now using a surface vibrator as a means for evaluating the probable life and serviceability of flexible pavement.

The vibrator was designed by the staff of the Royal Dutch Shell Laboratory at Amsterdam. Its purpose is to set up vibrations in the pavement under study corresponding as closely as possible to vibrations caused by the heaviest traffic expected on that road. Microphones placed on the road surface at varying distances from the vibrator are used to pick up vibrations which are analyzed by electrical means to obtain a measure of the stability of the underlying materials.

An alternating vertical sinusoidal force of up to 2,000 kgps can be set up by revolving excentric masses mounted on the vibrator. The generator operates in the 5-60 cycles-per-second range, covering most important frequencies imposed by road traffic.

PUMPING DON WATER—This is the first unit of the Karpovka pumping station which has begun work. It is one of three similar stations to be built.

Russia plans opening of Volga-Don Canal

The first unit of the Karpovka pumping station on Russia's Volga-Don Shipping Canal (above) started to work on the waters of the Don Feb. 1.

The 62.7-mile canal, due to open for traffic this spring, joins Russia's two main rivers and links the Caspian and Black seas, providing an industrial waterway from Leningrad to the Donets Basin. Through a system of eight distributive canals, the waterway will also serve to irrigate over one million acres and provide supplemental water for an additional 6 million acres.

Thirteen locks, are used to raise

(*Continued on page 56*)

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vessels from the level of the Volga, over highlands, and down to the level of the Don.

The Tsymlyanskaya hydropower development south of the canal is an important feature. The project includes an earth dam with concrete spillway, and has a 160,000 kw capacity hydro station to be used, primarily, for maintaining canal water levels.

During 1951, nearly 1 million cubic meters of earth was excavated on the canal project with 2 million cubic meters of concrete poured and 30,000 tons of steel used, according to Russian sources.

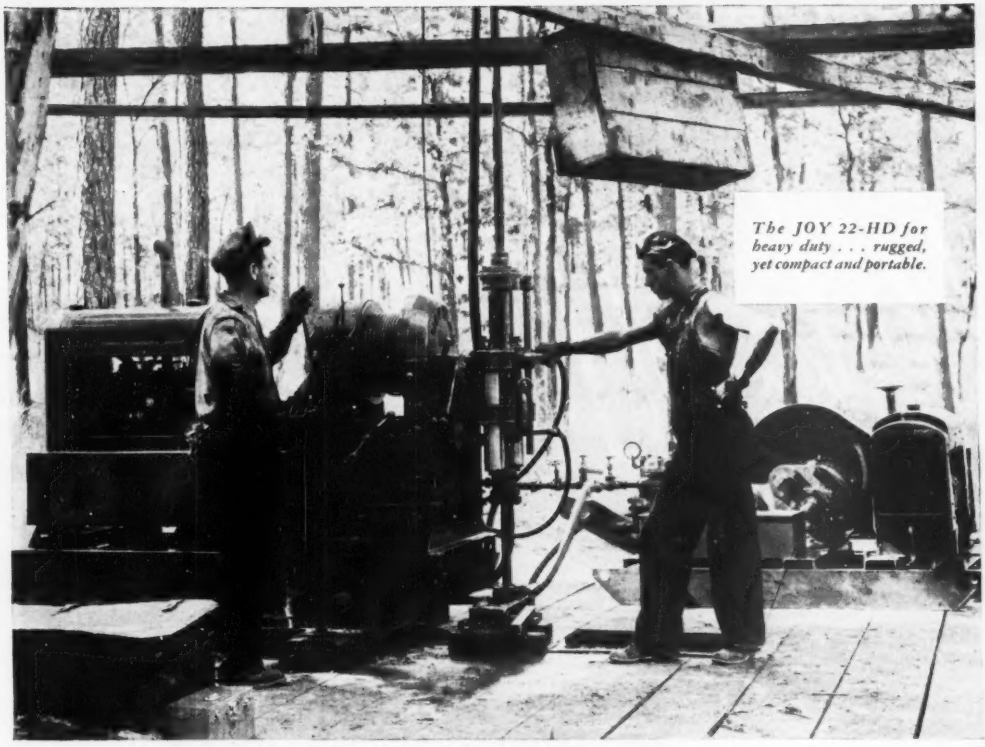
International Briefs

• **Water for Negev**—Israel's ambition irrigation scheme will take a big step toward becoming a reality when the Mekoroth Water Co. will begin soon to divert the Yarkon River to the Negev desert. The river now flows into the Mediterranean near Tel-Aviv but is to be diverted by means of 66-in. concrete pipes to the southern desert where the government is planning to settle many thousands of immigrants eventually. Water will be pumped by three diesel-engine stations with an aggregate installed horsepower of 25,000. About 70 miles of pipes will be used in the initial stage. It will take six years to complete.

• **A paying U. S. investment**—An American investment of $3.4 million in the economic recovery of the Netherlands under the Marshall Plan is now beginning to return dividends of many times that amount in military production for the Mutual Security Program. The investment, authorized in 1949 by the ECA, financed the expansion of a power plant in North Brabant, which is using the increased power capacity to turn out guns and ammunition for the Dutch and North Atlantic Treaty forces, as well as other orders for West European defense.

• **Roads for Belgian Congo**—The government of the Belgian Congo is to build 10,000 miles of new roads, and preparatory to that effort has opened schools at Kasangulu and Leopoldville to train service supervisors, and operators and maintenance men for road-building equipment of American manufacture.

• **Brazilian harbors**—A contract has been concluded between the Dutch contractors, R. Boltje and Son and the Brazilian government for eleven harbor projects in Brazil, involving the expenditure of more than $10 million in the next three years.



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Famous "open-top" scraper design

Safe, positive steering!

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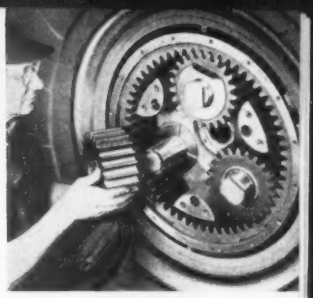
For example:

You don't have to pull the wheels of a Heiliner to get at the drive-wheel gears!



Heiliners are built to help you meet schedules—save money!

You just remove the hub caps to service the drive-wheel gears of a Heiliner — it's as quick and simple as that.

And that's only one reason why your Heiliner is seldom tied up in the shop. Heil design assures you of less down-time other ways, also:

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- The anti-friction bearings for the lead-in sheaves have dust seals for longer life.
- The heavy-duty batteries are located conveniently for servicing in jig-time.
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It's the design details like these — the "hidden values" — that help Heiliners pay out on jobs all over the country, even under adverse weather and ground conditions.

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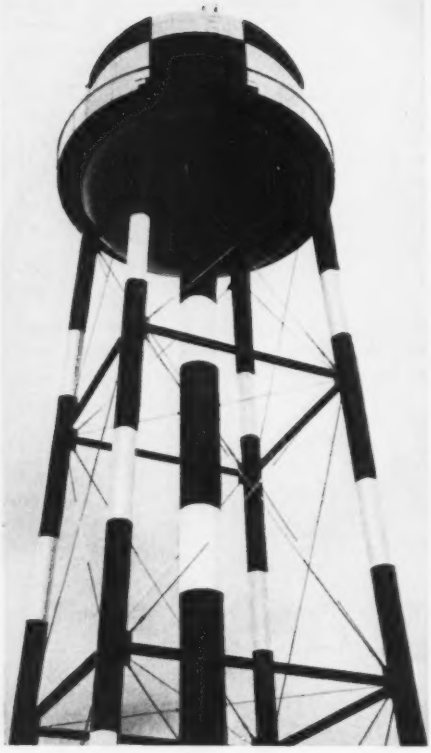
Plenty of power!
Dependable Cummins Diesel

Simple, easy-to-reach controls!
Levers adjustable to suit operator

Unobstructed visibility!
No obstructions to hide work

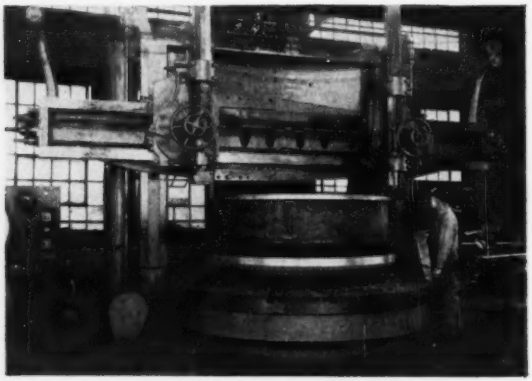
HOW 16½ ACRES STAND BEHIND

100,000 gals.



Posey Iron's 16½ acres of modern plant (under roof) stood behind the prompt delivery and sound construction of this 100,000 gallon elevated tank. Forty-one years of Posey Iron experience helped assure dependable engineering and design.

Posey Iron is equipped to do the complete job . . . from helping you determine correct type and size straight through to stress relieving, x-raying, pickling, painting and erection. The facilities of two large plate shops, an up-to-the-minute machine shop and a large foundry eliminate needless delays. Posey fabricates to meet both standard and special requirements in tanks up to all capacities. Write today for free 12-page reference bulletin.



This 16'6" vertical boring mill is one of the many tools recently added to Posey Iron's machine shop. This shop is fully equipped for the diversified machining operations demanded by Posey's different divisions.

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An urban redevelopment dream is coming true in Pittsburgh

GATEWAY CENTER—Pittsburgh's evidence of what public spirit can instigate and private capital can do once the case for urban redevelopment has been established on a sound basis of economical practicality—now nears first-stage completion. Tenants this month will begin occupying the first three of a proposed set of eight buildings.

This skyscraper group, 20 and 24 stories high, will sit in parklike surroundings in an area that was until recently covered with run-down business and industrial properties.

The project is but part of an overall plan for redeveloping the whole "Point" of Pittsburgh's Golden Triangle. Wedged between the Allegheny and Monongahela, where they join to form the Ohio River, this apex for years has been vulnerable to floods. High-waters of the rivers have had their toll; the whole Point is an economically blighted area.

Now the historic Point, where stood Forts Duquesne and Pitt, has been reclaimed from the rivers. Because of upstream dams, their stages no longer will reach such great heights. The Point will become an impressive state park. New bridges and roads will ease flow of traffic across the triangle now snarled with congestion. Through traffic will flow smoothly over the rivers and across the rebuilt triangle tip. Local traffic will have easier downtown access as well as additional off-street parking facilities. The new skyscrapers will house the offices of many a world-renowned company. All this is part of a dream, which rapidly is coming true.

THIS IS THE DREAM—a rebuilt section of city, free-flowing traffic and park area.

As Pittsburgh's redevelopment dream comes true . . .

Order out of disorder

FIFTY LOCAL BUSINESS MEN meeting back in the fall of '39 launched the campaign for a "beautified marketplace" in downtown Pittsburgh. There were problems of urban redevelopment ahead of them. Traffic at the apex of the Golden Triangle would have to be unsnarled; private property would need to be acquired—in addition to 36 acres at the Point planned earlier as a historic park. Now, nearly 15 years later their campaign is bearing fruit. A center of commerce is growing. And the whole Point is due for a revamping.

In 1940 highway planners set to the traffic relief task, and by 1945 $4 million had been earmarked for purchase of needed right-of-way. Park proponents made progress, too, winning approval of plans for developing the site.

Through the preliminary planning stage, emphasis on the history of the place suffered somewhat from the inability to find many worthwhile relics; significance of the site shifted to its position in Pittsburgh and Pittsburgh's claim as gateway to the West. The envisioned commercial center was tagged Gateway Center—and the name stuck.

EARLIER ENR STORIES

ON GATEWAY CENTER

Plans made public	Oct. 6, 1949, p 17
Letter from Pittsburgh	Mar. 2, 1950, p 112
Site demolition progresses	Oct. 5, 1950, p 29
$150 million highway plan	Feb. 7, 1951, p 44

• **The needed machinery**—In 1947 Pennsylvania's legislature passed the "Pittsburgh package," setting up separate authorities to handle the city's problems in parking, sewage disposal and urban redevelopment.

The Urban Redevelopment Authority went to work fast with the head start given it by civic groups (like the Allegheny Conference), the City Planning Commission and the State Highway Department that already had laid the groundwork of the plan. The Authority had the right to condemn and take property, and by early March, 1947, it had attracted to Pittsburgh a delegation of vice-presidents from the Equitable Life Assurance Society of the United States.

The vice-presidents went back to New York, and by January '48 Equitable had ready its terms. It would undertake a building project if tenants were to be found to make it pay. Other considerations included (1) state law permitting the financing (2) continued progress in smoke-abatement and (3) completion of Conemaugh Dam on an Allegheny tributary by the Corps of Engineers.

Two and a half years of negotiation finally ended in September '49 with Equitable indicating it would redevelop the 23-acre fringe of Point Park. Selection of architects, engineers and builders and formation of a board of design followed immediately (see box).

Land would be bought from the redevelopment authority at cost. There would be no tax exemption or subsidy. Equitable would pay the URA $1,000,000 over 20 years for its services in the land transactions.

Equitable's area for redevelopment is a dog-leg strip across the Point from the Allegheny River, to just short of the Monongahela.

There were legal hurdles to clear. It took a State Supreme Court ruling to uphold the law permitting insurance-company investment in the project.

Then a suit disputing the redevelopment authority's ruling that the area was blighted had to be beaten. Lastly, the authority's right to condemn land, then sell it for private redevelopment was contested—the case going all the way to U. S. Court for final dismissal.

• **And the walls came tumbling**—On May 19, 1950, Pittsburgh got going on its "world example of planned municipal redevelopments." The headache ball was let fly against a two-story brick building in the first blow struck against the structures to be removed.

All but four buildings on the site had to come down immediately. All streets but one through it were to be erased. Utility revamping (water, steam, gas, electricity, sewers) was nearly a complete removal and replacement job. Streetcar lines needed rerouting.

• **Parking, traffic big factors**—Parking figured heavily in the planning. An underground parking garage is to cover nearly all the area between buildings. At the northern tip of the site, a modern, four-story, open-air parking garage was left in place—excluded from the redevelopment area. And on some portions of the site where proposed buildings are to go in the future (only three of perhaps eight having been undertaken thus far) paved parking fields will be developed now for temporary use. Off-street loading facilities are also provided.

Relocated Liberty Avenue is being widened into a 160-ft. divided, parkway-style drive and when completed will be given back to the city in return for its former right-of-way. In its slightly shifted location it will become a nearly straight-line approach to a new Monongahela bridge—a double-decked crossing to carry traffic as part of the planned new Point highway redevelopment. George S. Richardson, Pittsburgh engineer, represented the city on the street work.

Other extensive street relocation in

the Point area is outside Gateway Center, at least physically. But it is not without effect on this new center of commerce. As may be seen on the airphoto-model montage opposite, both river crossings now at the tip of the Point will be moved upstream and tied together with a direct four-lane highway across Point Park, which will be in effect Gateway Center's front yard.

Each bridge will pour vehicles into its approach interchange where through traffic will separate from that wanting to get into Pittsburgh's triangle. Each river-crossing will tie to its respective river-front street. And, as noted above, traffic coming in across the Monongahela or Allegheny will have as another alternative Liberty Ave., the direct route through Gateway Center into the heart of Pittsburgh.

A relocated Barbeau St.—more or less an access drive—is planned to bound the project eventually on its pointward side. Within the site, walks will connect the buildings. There will be no streets in any part of the landscaped, planted area.

• **Redevelopment underground**—Subsurface utility revamping within the redeveloped site was not the most difficult, according to Meyer, Strong and Jones, New York mechanical consultants who did the design. It was almost a case of complete removal since the street grid system was wiped out.

Sigmund Roos was project engineer for Clarke, Rapuano and Holleran on redevelopment in peripheral streets and the one through street, Liberty Ave. A 36-in. combined sewer ran under this latter street, then cut across the site to empty into the Allegheny. (In the future it will be picked up by a trunk sewer planned by Allegheny County Sanitary Authority.) And the new development had to tie into this 36-in. sewer with 12-in. storm and sanitary lines. Into existing sewers in peripheral streets, too, go several 12-in. storm water drains, plus a 10-in. sanitary sewer from each of the buildings into the street nearest it.

City water flows in through an 8-in. delivery line below grade to the basement of the 24-story building at the corner of Liberty and Stanwix St. This building houses pumps in its basement and a 25,000-gal, two-compartment storage tank on its roof which water supply can feed by gravity to plumbing in all three present buildings. Separate feed to each building is also provided.

It is proposed, upon future extension of the project across Liberty Avenue, to have another 24-story structure there, with a twin water tank on its roof connected directly to that on the present building. This balance will smooth out pumping operations and permit shut-down of either tank for maintenance.

THIS WAS THE REALITY—congestion and disorder at the historic Point.

With steam, gas and electric connections it was a straightforward problem of tying each building to conduits in the street nearest it in the simplest way possible.

• **Cooling water conduit**—Early in the design stage Equitable was told it could get ample water of proper temperature for air conditioning purposes by sinking wells on the site. Investigations disproved this: Wells so near the Point would tend to dry up existing wells of other air conditioned buildings, then draw river water through or under bulkheads at either shore. It was decided to take the river water directly from the Allegheny in sufficient quantity to overcome undesirability of its seasonally high temperature.

An over-and-under double-barreled conduit was built from the river to the central air conditioning plant in a basement area alongside one of the buildings. This two-way conduit is a reinforced concrete structure with one 42x48-in. section atop another. A box intake is used in the wharf wall along the river.

Circulated condenser water will be pumped through the upper of the two sections; it will return to the river through the lower to discharge downstream from the intake. Three 4,600-gpm pumps will circulate 13,800-gpm through the system at the peak air conditioning load. Provision is made for ultimate installation of 8 pumps; the conduit has capacity for 36,800 gpm. Water is screened at the river; strained and chlorinated in the air-conditioning plant.

Construction of the cooling water line, complicated by having to cross under streets and existing utilities, involved both jacking and tunneling. Spencer, White & Prentis did the work. Steel H-piles support the structure, one each 15 ft of its length. Steel H-piles support the buildings, too—but that's another story.

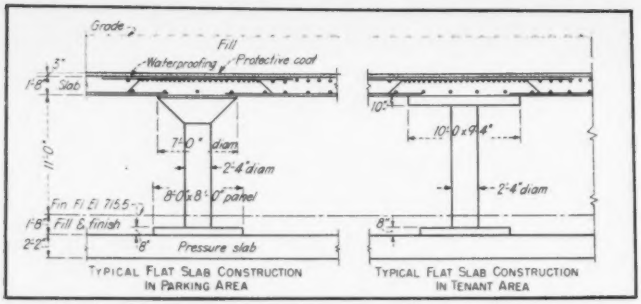
DESIGNERS OF GATEWAY CENTER

Plans and specifications were prepared by the architectural firms of Irwin Clavan and Eggers and Higgins; mechanical engineers Meyer, Strong and Jones; structural engineers J. Di Stasio and Co.; and consulting engineers and landscape architects Clarke, Rapuano and Holleran—all of New York City.

Irwin Clavan, Daniel P. Higgins, Henry F. Richardson, Joseph Di Stasio and Gilmore D. Clarke of those firms with Thomas I. Parkinson, Raymond H. Weins and Henry M. Schley of the Equitable Life Assurance Society of the United States, Kenneth R. Crumpton of Hoffman and Crumpton representing the tenants and John P. Robin of the Urban Development Authority of Pittsburgh were the members of a Board of Design. Andrew J. Eken of Starrett Brothers and Eken, Inc., the general contractor, and Robert W. Dowling of the City Investing Co. consulted with the Board.

The Board of Design met regularly and made all decisions. These decisions were translated into the drawings and specifications prepared by the architects and engineers.

As Pittsburgh's redevelopment dream comes true . . .



PRESSURE SLAB AND ROOF SLAB weight down the underground garage structure.

Building out the floods

GATEWAY CENTER, in its exposed location between two rivers, is going to get some high water despite valiant efforts of dambuilders upstream. So its whole substructure will be waterproofed and weighted with a hefty pressure slab to resist uplift.

Since the greatest flood of record crested 46 ft above normal water level on Mar. 18, 1936, six flood control dams have been put in service—four in the Allegheny watershed, two in the Monongahela. Retention of flood waters behind these dams would cut the crest of another flow of 1936 proportions by 5.5 ft. Comemaugh Dam, which will be finished this year, is to effect a further 4.6 ft of reduction, according to the Corps of Engineers.

But even then, a flood of 1936 proportion would crest at El. 730.1; and yearly high water now reaches El. 719. Gateway Center has its buildings' first floors at El. 732, its basement parking area floor at El. 715.5.

In basement service areas, the substructure for the three buildings undertaken so far gets down as low as El. 693. Hydrostatic pressure heads of 18 to 37 ft will bear against undersides of basement-floor pressure slabs.

• **Upward loads**—First inclination of J. DiStasio, structural engineer, was to put the whole project on 15-ton tension piles. Full investigation indicated economies instead in favor of providing sufficient weight in the structure itself to prevent flotation.

To accomplish this in the 168,000-sq ft of underground parking area between buildings, a 26-in. thick pressure slab topped by 20 in. of concrete fill and finish was generally required in addition to the weight of the roof deck and earth fill. This pressure slab was designed as an inverted flat slab mat foundation to support the roof deck columns. It was poured on undisturbed ground and was reinforced in each direction top and bottom.

In a few deep basement areas, beneath air conditioning units, for example, where foundations reach El. 693, the pressure slab for required dead weight reaches 7 ft thick.

Under the steel-framed office buildings, to provide for uplift pressure, similar reinforced concrete pressure slabs, 16 to 20 in. thick, were framed between pile caps.

Exterior foundation walls designed for a horizontal mud pressure of 100 psf varied in thickness from 1 ft 6 in. typically to 2 ft 6 in. at the deeper sections or where required for dead weight. Splayed haunches were provided top and bottom, and they were reinforced as a continuous frame with roof deck and pressure slabs.

The car ramp down into the parking space from street level is designed with cantilevered concrete side walls to act as a concrete "tub," and provide protection from all floods below El. 719. For higher water, the entrances at the bottom of the ramps are provided with structural steel flood gates. These gates operate on overhead tracks, and when not in use, are withdrawn into a recess provided along the exterior wall. When closed, they are bolted to the outside of the walls and are furnished with a rubber gasket around all four sides similar to water tight bulkheads for ships.

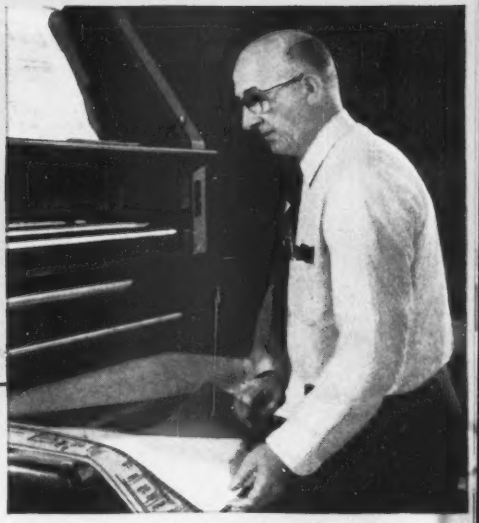
Pedestrian access to the underground parking areas and basement concourses is via stairs from the surface. Reinforced concrete stairwells are fully waterproofed and extended to El. 732—above flood level.

• **Downward loads**—The three office buildings are supported on 1,379 14-in. 89-lb H-piles driven to rock. Design load was 117.7 tons per pile. Piles, average slightly over 50 ft, were driven in places, through gravel, cinders, wood and brick fill. Driving was based on results of field pilot tests in which the maximum permissible deflection under the final blows was gaged. Reinforced concrete pile caps, 4 ft 8 in. or more thick, were used to distribute the column loads to the piles.

Roof over the 248-car parking area is a 20 in. thick reinforced concrete flat slab. Typical bays are 28 ft 6 in. by 26 ft 6 in. with 28 in. dia round columns. In the parking area, columns have 7-ft dia capitals, and in the tenant and restaurant area columns have 10-in. thick drop panels but no capitals. A minimum clear height of 11 ft is provided from basement floor to ceiling. The roof supports 3 ft 6 in. of earth fill, a total design load of 726 psf. The slab is water proofed and earth fill has drain pipe in it to carry off rain water. The 8, 10, and 12 in. drains lie on top of the waterproof coat and, besides draining the soil, they pick up surface run-off at catch basins.

• **Tying structures together**—A problem of major importance was the joint between the reinforced concrete parking area roof slab and the structural steel frame buildings. It was vital to waterstop successfully, and avoid stresses due to any relative motion between the two. For economy in the design of the structural steel, wind reactions from the towers were balanced by the lateral support of the deck slab, and it was necessary to transmit these forces—either tension or compression through the joint. A "blind joint" was used:

The flat-slab deck rests on spandrel beams 1 in. clear of concrete fireproofing of the steel building. These spandrel beams are supported on reinforced concrete columns placed opposite the fireproofed steel building columns. While resting on the same foundation, the twin columns are otherwise kept one inch apart for the full basement story height. A fireproofed 16-in. WF beam laid flat was erected between wall columns at the level of the outside deck slab, and was designed to transmit the wind load. U-shaped dowels, of the required strength, were wrapped around this beam and extended across the 1-in. gap for anchorage in the deck slab. This 1-in. space between beam and columns was filled with impregnated fibre board capable of transmitting compression and able to accommodate itself to shrinkage or other movements of the concrete. The upturned spandrel beam was flashed to the building wall above.



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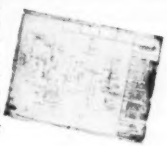

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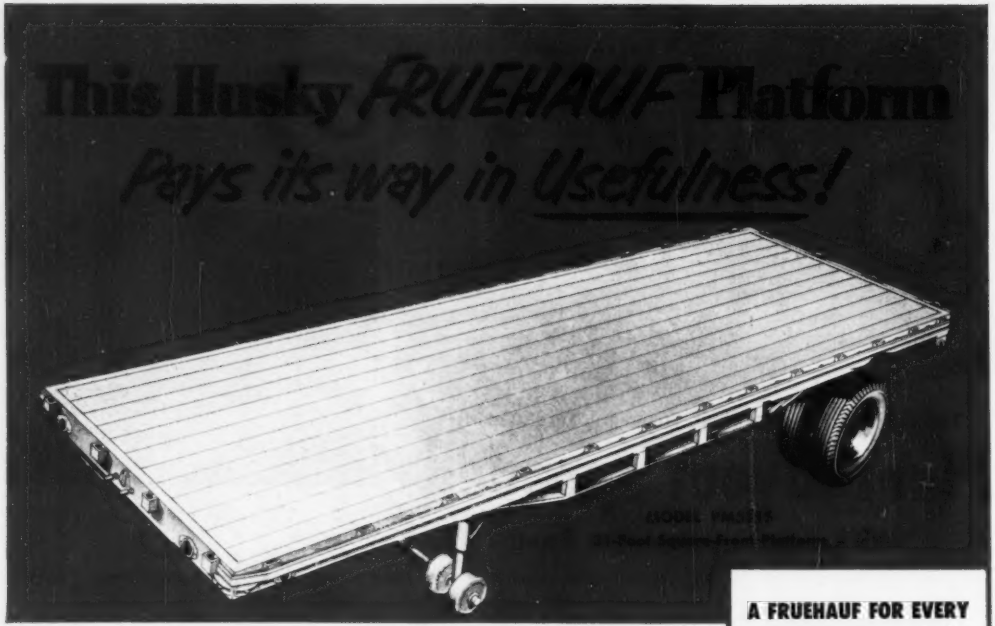

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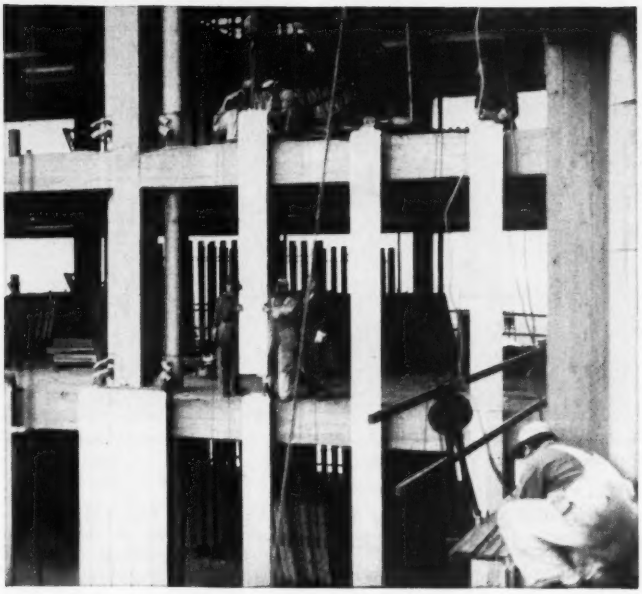


CONCRETE WALL UNITS faced with stainless steel for the Gateway Center office buildings are stored on each floor and erected with derricks.

MULLIONS, each one story high, are bolted to brackets on spandrel beams.

Precast panels enclose skyscrapers

EXTERIOR WALLS are going up fast for the initial three office buildings in Equitable Life's Gateway Center project in Pittsburgh, Pa. The reason is that the facing and precast-concrete backup are pre-assembled for installation as a complete wall unit.

The outer surface is light-gage stainless steel. Backup is perlite concrete, making possible a total thickness of as little as 4½ in., compared with the 10 to 13 in. frequently used for masonry walls. Yet, the wall is water proof, durable and attractive, has good thermal-insulating properties, and meets building-code requirements for fire resistance.

Standardized for mass production, the panels were designed so that only six different shapes are required. Smallest of these panels has an area of about 15 sq ft and weighs 1,000 lb. Largest is 100 sq ft and weighs 6,000 lb.

• **Cross-shape plan**—Two of the Gateway Center buildings being enclosed with these wall units are 20 stories high, the third, 24 stories.

Each building consists of four wings attached to a rectangular core, forming a cross shape in plan. Service facilities, such as vertical transportation (9 elevators, 2 stairways), toilets, pipes, and ducts for air conditioning, are concentrated in the central core, leaving wings unobstructed for office space. There is a total of 860,000 sq ft of office area available in the three structures.

Wings are only 49½ ft wide. Thus, no point in the office areas is more than 25 ft from a window. Length of wing is 74 ft, making the overall length of building a little under 200 ft. Floor-to-floor height is 11 ft 9 in.

Buildings have structural steel frames, with two longitudinal rows of columns in the interior of the wings. Columns in these rows are spaced about 25 ft apart. Beams are about 8 ft apart.

The steel is fireproofed with 2 in. of foamed concrete. Floors are wire-mesh reinforced foamed concrete, 4 to 5 in. thick. Ceilings are mostly perforated metal-pan acoustic tile, with fluorescent lighting troffers recessed in them.

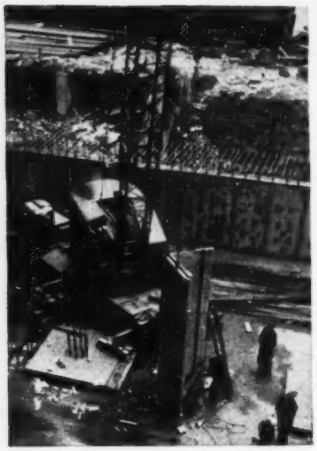
• **Stainless facing**—Almost the entire exterior of the three buildings, aside from the windows, will be covered with a serrated metal facing. Exceptions are the first story, where a granite facing will be applied, and a polished-granite strip extending the height of the structures where the wings meet the core.

The metal facing is only 0.031 in. thick. It is made of stainless steel, with 17% chrome, nickel being omitted to meet requirements of the Defense Production Administration. Rigidity is imparted to this strong, but thin facing by the concrete wall, which is cast in the facing in a factory.

Immediately behind the facing is a 1-in. thick porous-concrete breathing bed, for draining off any condensation that might collect there. The wall proper is a steel-reinforced perlite concrete, which is used for its insulating and fireproofing properties, as well as its light weight. Coefficient of heat transfer, **U**, for a spandrel panel is about 0.4. Strength of the concrete averages more than 2,000 psi.

In each story, there are 800 lin ft of wall, for which 252 panels are required. Panels are of three general types—pier coverings, mullions and spandrels.

• **Pier facings**—Mullions and pier facings, projecting 2¾ in. beyond the outer face of the spandrels, appear to



SPANDREL PANELS are inserted between mullions (left), seated on an enlarged portion of the stem and bolted top and bottom to the mullions (center). Angle sections with 4½-ft sides cover corner columns (right).

be continuous for the full height of the buildings. Supplied in story-height lengths, they are supported at each floor level by steel brackets welded to the spandrel beams.

At the end faces of each wing, pier coverings are 4 ft 2 in. wide. Along the sides of the wings, they are 4 ft 8 in. wide. Corners are one-piece panels, 4½ x 4½ ft.

For most of their width, pier facings are 5¾ in. thick. At the edges, however, where they are bolted to the brackets, they are thickened to 7¾ in.

• Mullions—Generally, spaced about 4 ft apart, the story-height mullions are mushroom shape in section. They are 7¾ in. thick, so that the spandrel brackets to which they are bolted line up with those for the pier facings.

The exterior portion, or head, of the mushroom is 16 in. wide, the stem 7½ in. wide. To form a seat for the spandrel panel, however, the stem is widened to 13½ in. for a distance of 2 ft near the top.

• Spandrel panels—Purpose of the mushroom head is to cover the joints where the spandrel panels intersect the mullions. The spandrels fit between mullions, or between a pier covering and a mullion, and extend from a window head in one story to the window stool in the story above. Seated on the mushroom stem and bolted top and bottom to the mushroom head of the mullions, or to the pier facings, they are entirely supported and braced by the story-height members.

The spandrel panels are 3 ft 10 in. wide by 5 ft 7 in. high, and only 4½ in. thick.

Aluminum windows are framed in the openings. Of the vertical pivoted type, they require a key to be opened, since the buildings are air conditioned.

• Construction procedure—Panels for the second and third stories of each structure were set with a crane. For the stories above, four stiffleg derricks are being used, one on each wing at the roof. Their main purpose is to erect pier facings, which are the heaviest sections. In spare time, however, they hoist mullions and spandrels to the various floors for storage until required at those levels. Coincidentally, a Chicago boom at roof level at an interior corner supplements the derricks by also hoisting those panels for storage.

Spandrels and mullions are set with the aid of pony derricks by 6 and 7-man gangs working at each floor level. The gangs include stone setters and ironworkers.

With 12 to 14 gangs on each building, six stories of wall are erected in a week.

When the walls for the first building to be enclosed were at the halfway mark, wall construction was started for a second structure. When the first building was fully enclosed, the crew shifted to the third building.

Architects for Equitable Life were Irwin Clavan and Eggers & Higgins, both of New York City.

The steel facings for the panels were formed by United Steel Fabricators, Inc., Wooster, Ohio. Cemenstone Corp., Neville Island, Pittsburgh fabricated the panels at its McKees Rocks plant and trucked them to the site. There, they were erected by James MacLean and the F. H. Sparks Co. of Pittsburgh.

H. W. Lindholm is superintendent of construction for Equitable Life. For Starrett Brothers & Eken, the general contractor, work is under the direction of B. H. Richardson and E. W. Hammer, vice presidents, and E. J. Fee, superintendent of construction.

AIR CONDITIONING

Two air-conditioning systems are being installed in the Gateway Center office buildings—one with equipment in the basement for supplying the lower half of each structure, and the second with equipment in the penthouse, supplying the upper-half.

At each floor, there are two air-conditioning zones: (1) A high-pressure system feeding units under the windows. It supplies air for the office space around the outer perimeter of the buildings. (2) A conventional duct system. It both supplies and exhausts air in the interior.

About 6,000 under-window units will be installed for the high-pressure system—50% more than for the United Nations Secretariat, largest previous installation. They permit individual control of temperatures in the peripheral areas. A ½-in. thick gypsum board, faced on both sides with aluminum foil, is placed between these units and the spandrel panels for insulation.

Refrigeration for the air conditioning is centrally located in the basement. Three centrifugal machines rated at 1,500 tons each, said to be the largest of their kind ever built, are being installed.

Carrier Corp. manufactured the equipment. Meyer, Strong and Jones were the engineers for mechanical equipment and Kerby Saunders, Inc., the heating and air-conditioning contractor.

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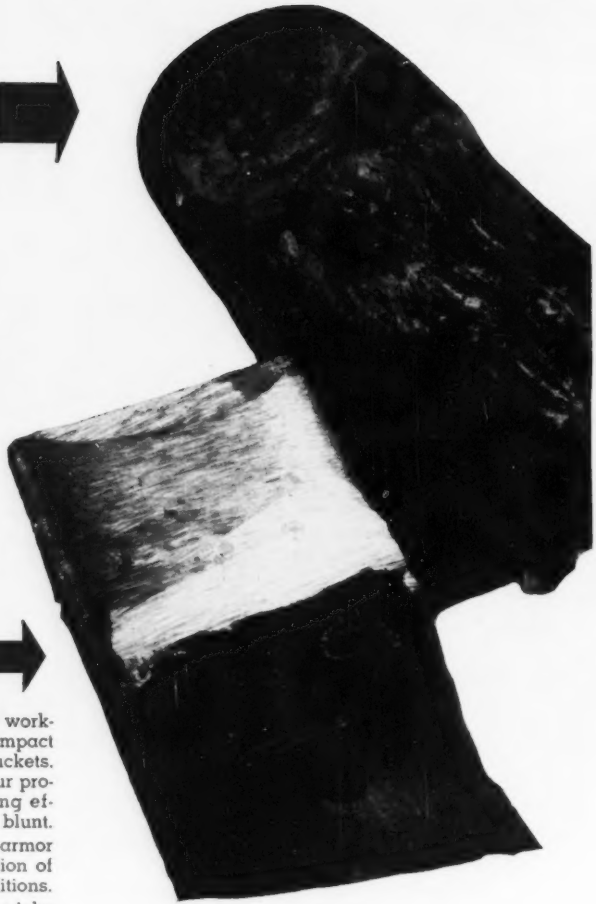

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HIGH STEEL TOWERS support forms for 319-ft long by 130-ft high concrete arch on freeway bridge in Pasadena, Calif. Falsework was designed to include steel available for the work. It will be salvaged for reuse. (ENR staff photos.)

Steel system supports big concrete arches

STEEL FALSEWORK permits efficient construction of big concrete arches for a California freeway bridge—probably the biggest concrete arch bridge yet built, from the standpoint of deck area. The steel support system is in lieu of the usual forest of timber falsework.

Two uses will be made of the set of three arch supports. A spectacular skid-based lateral move is planned to relocate each steel support system for the construction of a parallel set of three arches.

Design of the steel tower and girder system was based not on what would be most effective, but on the steel units available to the contractor for use. Most of the members are secondhand and they will all be available for reuse when construction of the bridge is completed. The bridge provides a six-lane freeway connection between Pasadena and Glendale, Calif., spanning the Arroyo Seco. The complex design of the arches—230 ft, 319 ft, and 230 ft in length—was described in ENR Aug. 9, 1951, p. 40.

• **Towers are main support**—The steel towers providing main support are made up of 12 and 14-in. members—both wide flange and H-beams. Smaller angles and channels brace the larger vertical members. Exact shape of each tower varies according to the location of the tower and size of members used.

Four towers support the 319-ft center span and three towers support the 230-ft side spans. Additional support comes from short steel bents at each end of each arch.

The towers support 36-in. wide flange, 230-lb and 300-lb girders. These same girders were used in the trestle system for construction of Davis Dam on the Colorado River (ENR Jan. 20, 1949, p. 83). Each arch has three parallel girder systems supporting forms for the 24-ft wide arches (for one span the arch width tapers from 24 to 32 ft. width).

The tower and girder system was designed primarily for vertical load only. Concrete pours are scheduled to minimize or eliminate horizontal thrust. Even so some thrust was noted on early pours near the end of the arches. This could be attributable to the horizontal component of the concrete in its fluid state when poured in sloping forms.

• **H-pile purlins**—Completing the steel support system are 40 ft long, 12-in. H-piles serving as purlins. These are spaced from 4 to 7 2/3 ft depending on location, with the closer spacing in general being on the steep slopes.

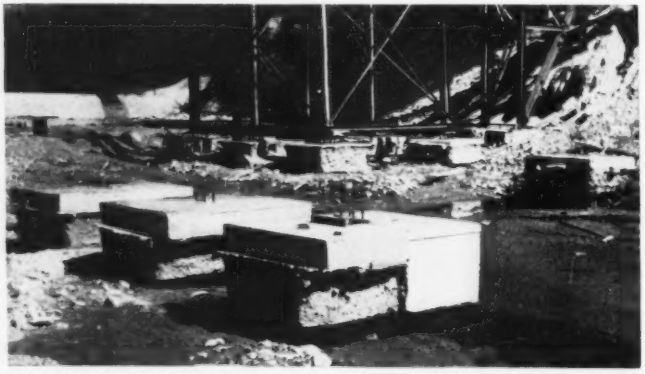
The 40 ft length permits construction of 6 ft wide stairways on each side of the 24-ft wide concrete rib. The stairs are solidly built and have a 3½ ft high rail—all designed to promote worker safety.

Topping the transverse purlins are 12x12 and 10x12 timbers at 3-ft, 10-in. centers. Connections between purlins and timbers are split ring and shear plate assemblies.

• **Steel work to be moved**—The entire steel support assembly described in the foregoing will be moved after the first set of three arches is completed. The contractor plans to skid them to support the second set of three arches.

Timber pile supported concrete footings mount bolts anchoring the towers. When time for the move comes, these bolts will permit a 4-in.

NEW CONCRETE ARCH BRIDGE (left) will carry six traffic lanes across the Arroyo Seco. Two-lane capacity of old arch bridge (right) has long been inadequate for traffic volume. New bridge will have two sets of three arches each.



FALSEWORK FOOTINGS were undercut by winter flood runoff—but wood piles still support concrete cap. Entire steel assembly will be skidded to this second set of footings for concrete placing. Anchor bolts permit 4-in. lowering for lateral movement.

LONG BOOM ON CRANE is used to supply materials and concrete to arch top. Boom on 60-ton crane is 130 ft long and has a 30-ft jib. Highest arch is 145 ft above foundation or about 130 ft from ground level.

lowering of the towers. Timber skids will be laid between old and new footings. Then a system of winches will go to work to move each arch assembly. Success of this system will be spectacular and promises to save the contractor time and effort.

• **Plywood and anchor chain forms**—Materials making up the arch forms vary from ⅝-in. water proof plywood to anchor chains. The plywood, of course, is the form facing. The anchor chains—unusual items for formwork—are part of a system that anchors the top form on the steeply sloping part of the arches.

The contractor originally planned to use tie rods to hold the top form in place. But the difficulty of placing the rods in the cramped space available ruled that out. Instead, 12-in. H-piles across the top form hold it down. These are tied to the H-piles serving as purlins by a turnbuckle and anchor chain system. Top forms are used where the slope of the arch exceeds 30 degrees.

The curvature of the arch is formed by bending 20 to 24 ft long, 4x6 timbers over blocking. This was done instead of cutting camber strips.

State specifications include explicit instructions for sequencing of concrete pours on the arches. Purpose is to balance load on the arches and prevent establishment of construction stresses. Pours on the ends of the arches are made in pairs and alternated with pours at the top of the arches. Key pours partway up each arch slope are left until at least 10 days after all other concrete on that arch has been poured. Key pours on the center arch must be made first at least 10 days before key pours on the side arches. Arch pours average 100 to 150 cu yd with the largest being 217 cu yd.

The same careful sequencing is called for in pouring the spandrel or arch columns and the various deck elements. Deck forms will be supported by H-piles resting on posts set on the arch.

• **Long boomed crane**—All high concrete pouring as well as general servicing of the job is done by a power crane with a long boom—130-ft boom and a 30-ft jib. Concrete is lifted in 2 cu yd air operated buckets. Air supply is mounted on the crane. Concrete is brought to the job in transit-mix trucks since there is no room at the job for a batch plant. The entire bridge includes 29,800 cu yd of structural concrete and 5,600 cu yd of concrete in the arch ribs.

• **Safety**—An entire article could be

(*Continued on page 74*)

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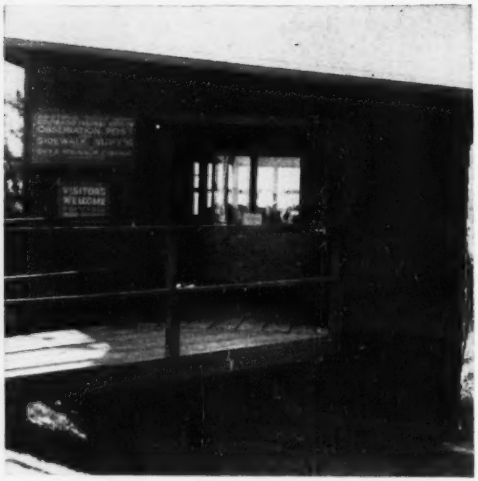
STEEL H PILING braces top form on steep section of arch. H-piles are anchored with heavy-duty turnbuckles and anchor chain. Wide stairway beside arch is an extra safety measure.



SIDEWALK SUPERINTENDENT'S SHACK houses state owned model of old and new bridges. Contractor provided view point to maintain good relations with local people.

BUILDING THE BRIDGE are Robert K. Boyd (left), project manager for Guy F. Atkinson Company, contractor on the job, and H. R. Lendecke, resident engineer for the bridge department, California Division of Highways.

(Continued from p. 72)

written about the various safety measures and safe practices used by the contractor on the job. Some of these have already been covered, namely: the 6-ft wide stairway on each side of each arch and the air-operated concrete buckets used so a workman does not have to ride on or reach up to the bucket to activate it.

As another safety measure, a platform was built between the bottom flanges of the 36-in. girders supporting the arches. This gives greater assurance to men in high level work.

Since high work is bound to be slower no matter what precautions are taken, forms are assembled on the ground as much as possible.

Power for electric hand saws, vibrators and other equipment comes from portable generators located as close as possible to point of use. This eliminates high wires that are the source of crane boom accidents.

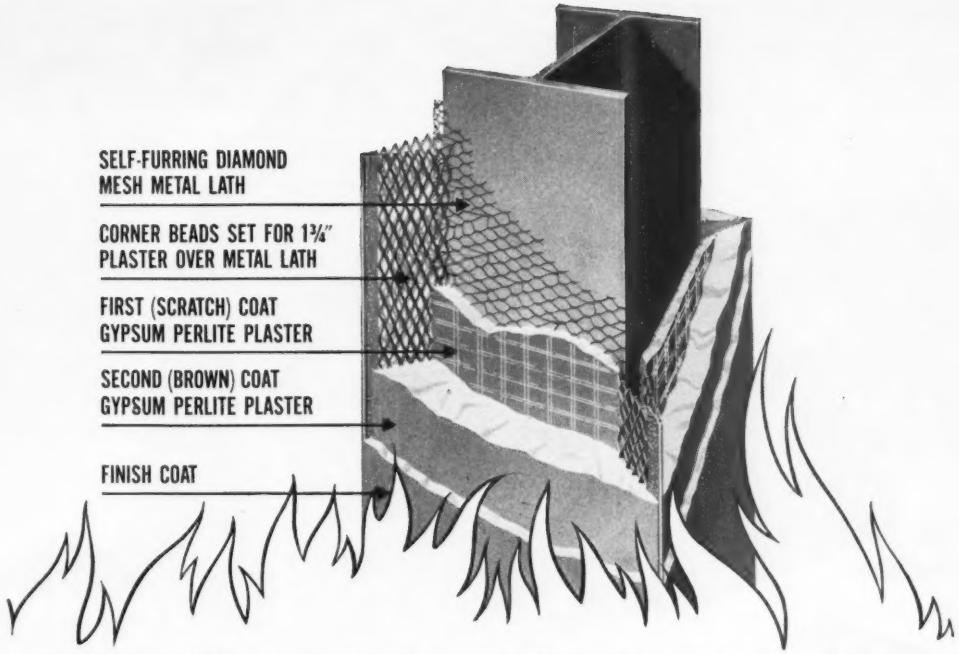
• **Public relations**—As another plus factor in execution of the job, the contractor has maintained an excellent program of relations with public officials and just plain spectators. The bridge is being built in a relatively exclusive residential area so this is an important factor. A redwood observation house was erected overlooking the job.

A state-owned scale model of the work is available here so onlookers can familiarize themselves with the layout.

The contracting agency is the State of California but the contractor of necessity must approach Pasadena city officials on many problems. These include, among other things, street closures, water supply and zoning variances. This latter was necessary to get property purchased for work area rezoned for the duration of the job. Utmost care and tact in dealings with city officials has helped make a smooth running job.

• **Credits**—Contractor on the work is Guy F. Atkinson Company with a $3,389,650 contract for the bridge and approach system. Supervision is under D. E. Root, southern California area manager, J. J. Draine, assistant area manager, and R. K. Boyd, project manager. The steel falsework system was devised by the engineering staff of the contractor's Long Beach office under W. T. Colwell. Detailing of the system was by Moffatt & Nichol, Inc., consulting engineers of Long Beach, Calif.

H. R. Lendecke is resident engineer for the state bridge department. He reports to J. W. Green in charge of southern California office. F. W. Panhorst is bridge engineer and G. T. McCoy is state highway engineer, both in general charge of the work and both located at Sacramento.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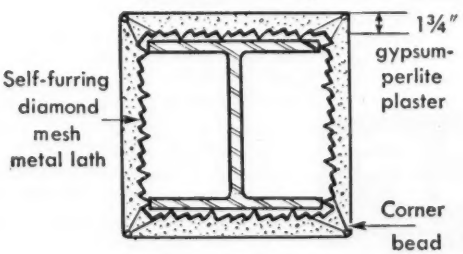

This new fireproofing is only one-seventh of the weight of standard protections, such as encasing the column in concrete or brick. When this extra "dead load" is eliminated, the steel columns can be smaller – conserving defense-needed steel as well as reducing the cost of the structure.

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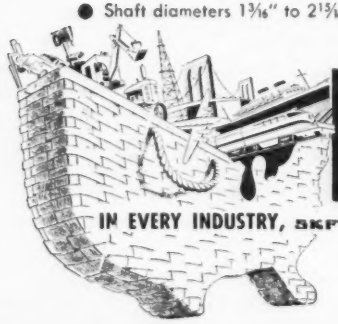
Detailed illustration of rotating flinger and RED SEAL—the extremely light tension contact seal.



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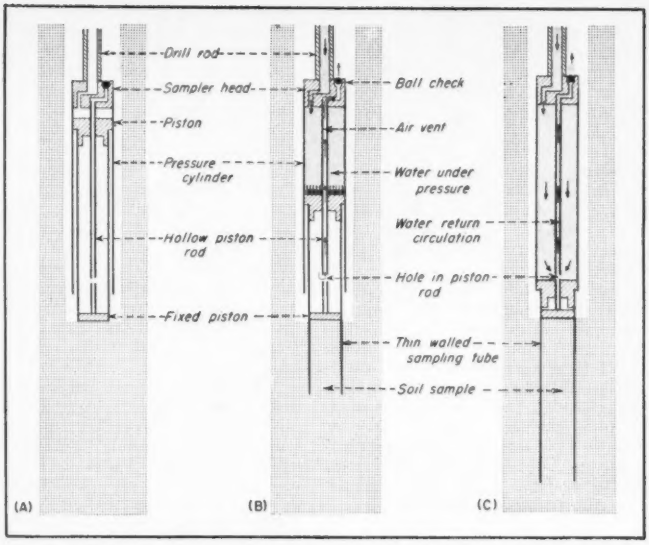


SUCCESSFUL METHOD: (A) Sampler is set in drilled hole; (B) sampling tube is propelled hydraulically into soil; (C) pressure is released through hole in piston rod.

ADVANTAGE: only one string of rods is needed.

New piston-type soil sampler

J. O. Osterberg
Associate Professor of Civil Engineering
Northwestern University
Evanston, Ill.

A SIMPLE, hydraulically-operated piston sampler—recently developed by the author—has been found to be unusually successful in obtaining full recovery on 5-in. dia tube samples 4 ft long in both sands and clays. A major advantage of this sampler over the usual fixed piston type is that only one string of rods is needed to operate it. In addition, the pushing is done hydraulically, and it is impossible to overdrive.

• **How it operates**—The sampler is lowered into a previously drilled and cleaned-out hole (A). When water pressure is applied through the drill rod, a piston to which a thin walled sampling tube is attached is forced out of the pressure cylinder (B). A second piston—the fixed piston inside the sampling tube—is connected to the sampler head by a hollow rod. As the piston is forced down in the pressure cylinder, air in the sampler tube escapes through the hollow rod and ball check. The reaction for the pushing is obtained by clamping the drill rod either to the casing or to the drill rig.

When the piston has reached its full stroke and the sampling tube penetrated its full depth in the soil, water pressure is automatically relieved by allowing circulation through a hole in the hollow piston rod and through the ball check (C). The sampler is then turned 1½ revolutions (the inside tube being held to the outside tube by means of a friction clutch) to break off the soil at the bottom of the tube. The sampler is then ready for removal from the drill hole.

• **Developed for Milwaukee job**—The sampler was developed in connection with a comprehensive foundation investigation for the Milwaukee Sewage Commission at its sewage disposal plant on Jones Island. Since there was no hydraulically operated rig available, and since it would be impractical to push 5-in. dia tubes into the bore hole with the cable tool rig on the site, the need was apparent for the development of an independently operated sampler.

The sampler constructed for this job has a 4-ft stroke and uses 5-in. OD tubing for the samples. Unfortunately, 14-ga seamless tubing was not available so ¼-in. wall steel tubing was used. Since both sands and clays were expected, no inside clearance was left on the cutting edge. Unusually good recovery was obtained, however, in both sands and clays in spite of the thick tube wall and no inside edge clearance.

• **Tests went 81 ft deep**—The samples were taken in both cased and uncased holes, but drilling mud was used in all holes. The holes were advanced and cleaned by a fish-tail bit and mud circulation. Continuous samples were taken between 24-ft and 81-ft in depth. Pressure was applied to the sampler with clean water through a hand operated pump capable of exerting 250 psi pressure. This corresponded to a 4,000-lb thrust on the sampling tube.

At first it was thought that a hand operated pump would not be satisfactory because of the pulsations in pressure when stroking. However, constant pressure was maintained easily. Moreover, the excellent recovery and lack of disturbance in the samples was proof of the adequacy of a simple hand pump.

Of the three holes drilled from which 5-in. samples were taken, a total of 38 tube samples were taken in material varying from fine silt to coarse sand with some gravel, and from soft uniform clay to a hard varved clay. In addition, considerable amounts of organic clayey silts with fibrous material and numerous shells were encountered.

• **High rate of recovery**—Of the 38 tubes, 26 had full recovery (99-100%), 7 had between 96 and 99% recovery,

and 3 were empty. About 1-ft of sample was missing out of each of the other two tubes. In the case of sands, when 4 to 5 in. had dropped out of the bottom of the tube and the top of the soil was flush with the piston, full recovery was assumed. Full recovery was obtained on all samples taken entirely in clay. The soil samples were left in the tubes until ready for laboratory analysis.

• **Fixed-piston vs open-drive**—Basically, fixed-piston samplers offer distinct advantages over open-drive samplers: During driving, the fixed piston prevents entrance of shavings and disturbed soil. During sampling, the fixed piston aids recovery by pulling hard soils into the tube when wall-friction tends to prevent such entrance, and in soft soils prevents excess soil from entering.

Another advantage: During withdrawal, the fixed piston eliminates the pressure over the sample, preventing it from dropping out of the tube.

• **Saves time and labor**—The hydraulically-operated piston sampler has additional advantages: The time-consuming job of stringing a set of rods inside of the outer drill rods to hold the fixed piston is eliminated. The hydraulic pushing action on the sampling tube is easily controlled to obtain a continuous push.

Another great advantage is that while ejecting, the sampler cannot be twisted, struck by blows or over driven. And even though the tube strikes a boulder or stratum too hard to penetrate—thus preventing a full 4-ft stroke—it is still possible to secure 100% recovery for the partial stroke.

• **Who developed it**—The hydraulic sampler was developed in the Northwestern University machine shops, with helpful suggestions of P. C. Rutledge, chairman, Department of Civil Engineering; and John Schmertmann, former graduate student. Klug & Smith Company, Engineers and Contractors, Milwaukee, directed all sampling at Jones Island and suggested modifications of the sampler.

• **Who makes it**—Arrangements have been made with Soil Testing Services, Inc., 4520 West North Ave, Chicago, for manufacturing the hydraulic sampler in 3-in. and 5-in. sizes.

Obstacles threaten underground dam

Obstacles have developed to threaten continuation of the Manhattan Beach, Calif., experiment for the control and prevention of sea water intrusion into ground water basins (ENR Oct. 11, 1951, p 75).

The $450,000 project, authorized last September by the State Water Resources Board, has been widely publicized because it involves the spectacular attempt to build an underground dam made of water. Through the use of injection wells the experiment would attempt to determine the feasibility of creating a coastal pressure mound barrier to stop sea water encroachment.

The snags in the path of the experiment were reported to the State Water Resources Board at a meeting in Sacramento last month.

They are:

1. The geological aspects of the test site are such to make it difficult to evaluate experimental data of injection rates and shape and size of pressure mound in terms of hydrologic parameters such as permeability and thickness of aquifer. The lower boundary of the aquifer is not readily ascertainable and there is a wide variation in formation characteristics and permeability throughout its depth. The good water bearing material occurs in relatively thin strings. The presence of fine, running sand at intervals in the aquifer complicates drilling.

2. The beneficial results of a field test at the Manhattan Beach site may be qualitative rather than quantitative. Relatively few definite design-criteria applicable to other coastal areas may be developed.

3. Lack of an assured continuous supply of water for the test may make it impossible to obtain data on the effects of continued injection over a long period of time.

4. The landward movement of a wave of highly saline water caused by the proposed injection may result in serious damage to the quality of water extracted at inland wells.

5. All persons and agencies participating in the project would be jointly liable for the resulting damage to the overlying owners if injection of fresh water as part of the experimental project is the cause of contamination to the ground water supply.

6. More than $450,000 allocated to the project will be needed to continue the work beyond seven months.

• **Halt called**—After hearing the report, made by Harvey O. Banks, principal hydraulic engineer for the Division of Water Resources, the Water Resources Board called a halt to the actual injection of water until waivers are obtained from the water service organizations in the area to the effect the state would not be responsible for any damages which may result.

While the Resources Board members may have been discouraged by the report on the Manhattan Beach project, Engineer Banks had more favorable news for them on the state's investigation of the use of earthen cutoff walls to prevent sea water intrusion.

"Theoretically," Banks told the board, "the earthen cutoff wall offers such definite advantages in the prevention of sea water intrusion that it would appear desirable to conduct further investigations.

"Certain needed data and information could be obtained only from a field experimental project, to wit: determination of feasibility of excavation to the depths required, say in the order of 200 ft; construction techniques of excavation, and of mixing and placing backfill; and costs."

• **Proposition**—Banks informed the board a large construction firm has informally proposed a construction plan for a cutoff wall across the 800 ft wide narrows at the lower end of the San Luis Rey Valley in San Diego County.

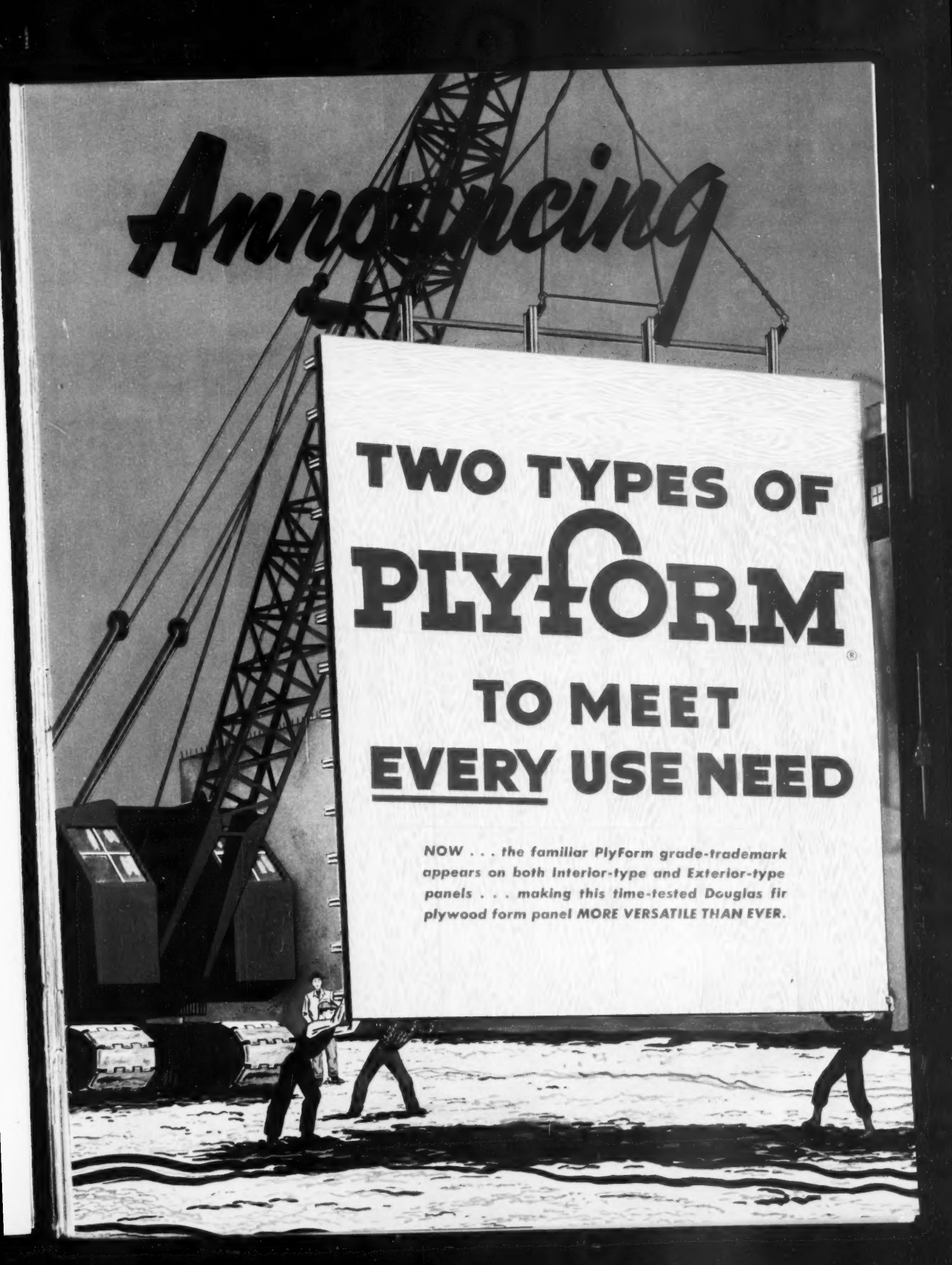
He estimated such a project might cost $350,000, including preliminary subsurface exploration and geologic investigation, construction, and subsequent core drilling and experimental investigation to determine the effectiveness and continuity of the wall in place.

The Banks report cited the following advantages of a cutoff wall type of barrier:

Can be considered permanent; does not require continual operation; low maintenance cost; consists of a physical structure possessing definite known boundaries and continuity, as contrasted to chemical, cement, or asphalt grouting, or a pressure ridge; permits greater development and utilization of storage capacity of underground basins; does not require a supply of water for operation; does not necessarily waste fresh water to the ocean.

Disadvantages named are:

Probably high initial cost; requires planned operation and possibly exportation from basin to maintain quality of the ground water since no flushing of the basin occurs during wet periods; frequent salt balance studies would be required; requires extensive geologic exploration to determine the characteristics of subsurface formations and there are limitations on the depth to which it is possible to construct such a barrier.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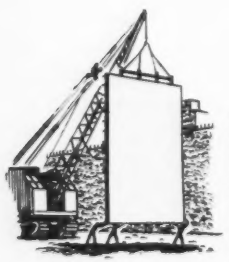
Specifications: Completely waterproof bond. Both faces of B veneer which is smooth and solid, but may contain small tight knots and neat circular repair plugs. Inner-ply construction (as in all Exterior fir plywood) of C veneer contributes to strength and superiority of panel. Sanded both sides; edge-sealed with red and, unless otherwise specified, mill-oiled. Width 4'. Length 8'. Thickness: 5/8" and 3/4", 5-ply.

2 INTERIOR-TYPE *for multiple re-use*

Interior-type PlyForm is now manufactured with improved glues to provide greater service than ever. These newly fortified glues are *not* waterproof, although highly moisture-resistant. Interior PlyForm panels will withstand several pourings of concrete . . . up to 10 or 15 are not unusual, dependent upon care on the job and between pours. Interior PlyForm continues to be identified by the familiar diamond-shaped grade-trademark. Edges sealed with distinctive green sealer.

Specifications: Highly moisture-resistant fortified glues (not waterproof). Interior PlyForm is identical in face-ply characteristics and inner-ply construction to Exterior PlyForm. Sanded both sides; edge-sealed with green and, unless otherwise specified, mill-oiled. Width 4'. Length 8'. Thicknesses: 1/4", 9/16", 5/8", 3/4", all 5-ply, and 1/4" 3-ply for form liner.



COVER ILLUSTRATION: Artist's conception of Exterior plywood form sections used for foundation walls of Port Authority Bus Terminal, N.Y.C. Consultant Engineer: Jacob Feld, N.Y.C., who designed 28'-high by 24'-long pre-assembled plywood sections, reports "forms very successful. Six re-uses on walls, plus re-use on other parts of building, but forms could have been used indefinitely." Contractor: Foss, Holloran & Norr, Inc., Long Island City, N.Y.

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For special architectural concrete which requires the finest possible finish, specify new overlaid plywood or either Exterior or Interior grades with one or both faces of "A" veneer (veneers of highest appearance quality). Such grades include: EXT-DFPA PlyShield (A-C), EXT-DFPA A-A; Interior PlyPanel A-D and Interior A-A.

New overlaid panels (plastic surfaced plywood and hardboard-faced plywood) have all the inherent strength properties of plywood plus hard, glass-smooth surfaces. Fir plywood industry symbol (above) on overlaid plywood panels indicates product craftsmanship and quality.

Ⓡ *These registered grade-trademarks identify quality plywood manufactured and DFPA-Inspected in strict accord with U. S. Commercial Standard CS45-48*

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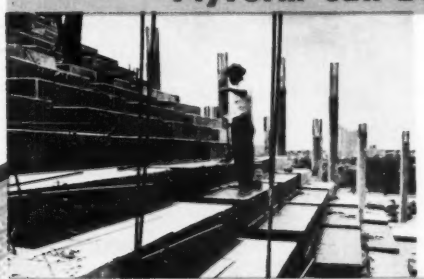
made in 2 types

PlyForm Creates Smooth, Fin-Free Surfaces

PlyForm was specified on the new Carnation Company western headquarters building, Los Angeles, by Stiles Clements Associated Architects and Engineers for "smooth, fin-free concrete, ease of handling and overall job economy." According to the architects, "Plywood offered the simplest, most direct medium for achieving the smooth concrete because it permits an even-textured monolithic surface to be cast simultaneously with the structure." Smooth walls required a minimum of finishing before painting. Contractors on the job: William Simpson Construction Co., Los Angeles.

PlyForm Can Be Used Over and Over



"We've found plywood forms to be the most economical for several reasons," says C. J. Rollo, job superintendent for Brown & Root, Inc., contractors for the new Rice Institute Stadium, Houston. "Given proper care, they can be re-used again and again; they're easier to handle, produce better looking concrete." On the job, built-up Interior-type PlyForm seat forms were still in good condition after ten re-uses. An even greater number of re-uses was recorded for wall and fence forms. Architects: Floyd & Morgan and Milton McGinty, Houston, Texas.

PlyForm Saves Time and Labor Costs

"Plywood speeded form work all along the line," says Earl Starbard, job superintendent of Woodworth & Co., contractors for all concrete work on the new mile-long Tacoma Narrows Bridge. On the job, contractors report, use of built-up plywood form sections "cut time and labor costs by 15%." Plywood forms were used to form the reinforced concrete roadway and for all above ground concrete on the anchors, toll houses, bents and viaduct. Structure built by the Washington State Bridge Authority; Charles E. Andrew, chairman and principal engineer.

PlyForm Offers Design Adaptability

Plywood forms were called on to solve an unusually intricate concrete job in building the spectacular twin-spiral ramps at the University of Washington grid bowl addition. "Plywood forms offered the simplest and least expensive solution," reports Elmer Strand, partner of Strand and Son, General Contractors, Seattle, Wash. "The panels can be re-used many times. They're easy to fabricate into cost-cutting built-up form sections and are easily bent to form curved surfaces." Architects: George W. Stoddard and Associates, Seattle, Washington.

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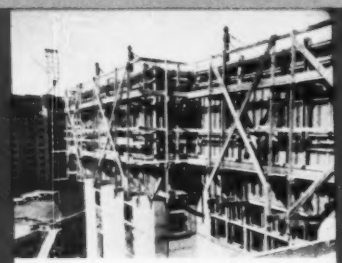

Care On Job

Although plywood is far more rugged than other panel materials, maximum serviceability and re-use depends largely on the care it receives on the job.

After each use, nails should be pulled and panels cleaned with a wide blade, stiff broom or wire brush. Wipe clean with a burlap pad. After each use, panels should be re-oiled with a uniform coating of good form oil. (For plastic surfaced plywood, see individual manufacturers' directions on whether to oil.)

Attention should be given to corners and edges. All saw cuts and other workings should be "doped" with lead and oil, aluminum primer, shellac or similar material as the job progresses. Open cracks in joints should be pointed up or caulked with lead, putty or plaster of Paris filler.

Application

Plywood forms require proper support from studs or joists. Height, rate of pour and fluidity affect pressures and spacing of supports. Desired smoothness of finished wall also affects form specifications.

The following values are offered as guides to thicknesses of Douglas fir plywood for concrete form construction. Allowance is made for the decreased stiffness (about 20%) of the panel by wetting, the period of loading, and the increased stiffness developed when the panel is continuous over two or more spans. Values calculated on panels with face grain across the studs.

PlyForm Thickness	Stud Spacing	Deflection Permissible	Load
⅝"	12"	1/270 of Span	880 lbs./sq. ft.
⅝"	16"	1/270 of Span	375 lbs./sq. ft.
¾"	12"	1/270 of Span	1,330 lbs./sq. ft.
¾"	16"	1/270 of Span	560 lbs./sq. ft.
⅝"	12"	1/360 of Span	660 lbs./sq. ft.
¾"	16"	1/360 of Span	420 lbs./sq. ft.

Stripping, Storing

Large, rigid plywood form panels strip quickly, easily. The resilience of the wood distributes pull over a large area to minimize any danger of spalling. If wedging is required, use only wood wedges, lightly rapped to break the adhesion. Panels should not be allowed to drop from ceilings or walls, but should be removed using scaffolding or platforms.

After stripping, panels should be cleaned and re-oiled (see directions at left). If form sections are completely dismantled, panels should be stacked evenly on a dry and level platform, protected from rain, sun, and traffic abuse. Long-time storage should be indoors. Interior PlyForm panels should *not* be stored under tarpaulins.

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New Keely PlyForm calculator gives construction data for plywood forms, based on hourly rate of pour. Complete with leaflet, "Design Assumptions for new Keely Calculator." Send $1.00 to Douglas Fir Plywood Association, Tacoma 2, Wash.

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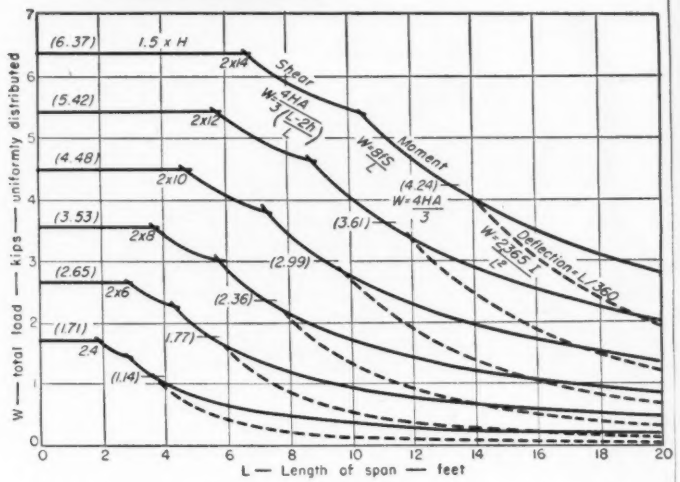


Timber-beam selector chart

This chart is a plot of the critical portions of the shear, moment, and deflection curves for various S4S sections. For any span and loading, the chart indicates the one factor that controls, eliminating the need for investigation of the others. The curves are based on $E = 1{,}600{,}000$, bending stress of 1,700 psi and horizontal shearing stress of 145 psi.

Use of the chart is most easily explained by examples:

• **Example 1**—Select a beam to carry 1,800 lb uniformly distributed over a 12-ft span.

Answer—Entering the chart with these values, you will note that the point of intersection is considerably above the moment curve for a 2x8, indicating that this size is inadequate. The next size, 2x10, is required.

• **Example 2**—Select a beam to carry a total uniform loading of 2,000 lb over a 14-ft span.

Answer—The point of intersection of these values falls just slightly above the 2 × 10 moment curve. For flexural strength, a 2x10 would be adequate. If deflection is limited to $L/360$, a 2x10 is not satisfactory.

• **Example 3**—Find the deflection of the 2x10 of Example 2.

Answer—Find the value of W which produces a deflection of $L/360$ over a 14-ft span. This value is 1.4 kips. Since deflection varies directly with load, the desired deflection equals $L/360$ times 2.0/1.4, or $L/252$, which for a 14-ft span is $\frac{3}{4}$ in.

Note that the weight of beam has not been included in the examples. It should be considered for large beams or long spans.—Christian W. Matthews, 4650 East Yale Ave., Denver 20, Colo.

More Centennial chairmen, subjects are announced

Four additional chairmen for the 11-day convocation to be held in Chicago Sept. 3-13 in connection with the Centennial of Engineering have been announced.

The four who round out the program and the subjects to be covered under their leadership are:

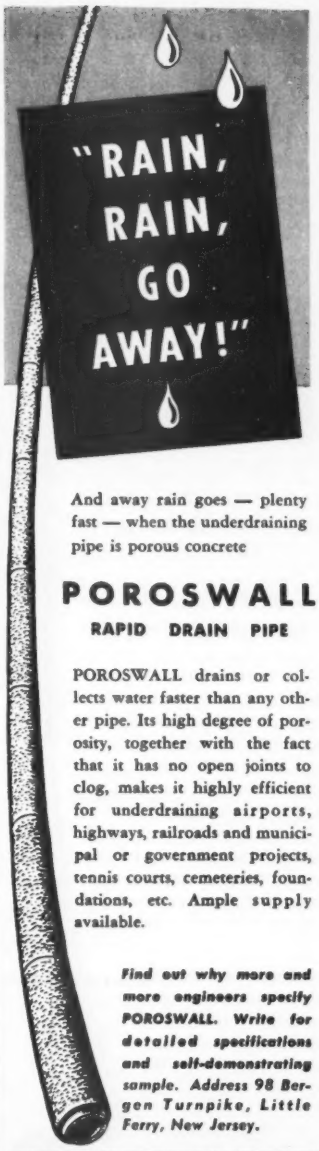
Urbanization – Harland Bartholomew of Harland Bartholomew & Associated city planners, St. Louis, Mo.

Health—Thomas A. Parran, of the Graduate School of Public Health, University of Pittsburgh, and former Surgeon General of the U.S. Public Health Service.

Education and training—A. A. Potter, dean of engineering, Purdue University.

Professional societies—Harry S. Rogers, president, Brooklyn Polytechnic Institute.

While the Centennial of Engineering will start in July, the climax will be the convocation period when many thousands of representatives of the 59 American and foreign engineering groups participating will assemble in Chicago.



And away rain goes — plenty fast — when the underdraining pipe is porous concrete

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POROSWALL drains or collects water faster than any other pipe. Its high degree of porosity, together with the fact that it has no open joints to clog, makes it highly efficient for underdraining airports, highways, railroads and municipal or government projects, tennis courts, cemeteries, foundations, etc. Ample supply available.

Find out why more and more engineers specify POROSWALL. Write for detailed specifications and self-demonstrating sample. Address 98 Bergen Turnpike, Little Ferry, New Jersey.

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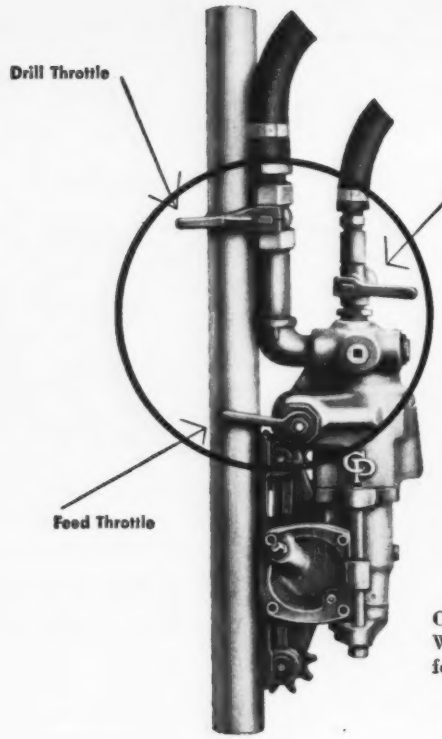


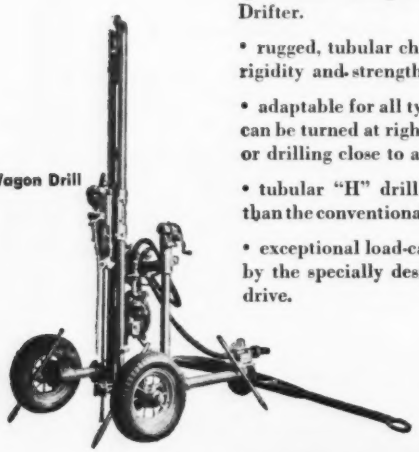
centralized controls...

for efficient operation

One of the outstanding advantages of the G-300 WAGON DRILL is the convenient grouping of drill, feed and blowing throttles.

G-300 Wagon Drill

- designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter.
- rugged, tubular chassis and drill carriage provides rigidity and strength without unnecessary weight.
- adaptable for all types of wagon drill work. Wheels can be turned at right angles to facilitate line drilling or drilling close to a ledge or wall.
- tubular "H" drill support gives greater stability than the conventional design and minimizes vibration.
- exceptional load-carrying capacity is made possible by the specially designed feed motor and cone-gear drive.



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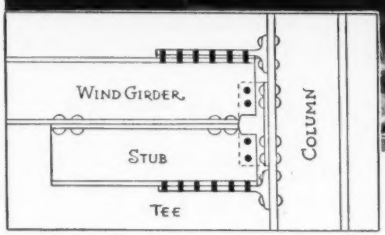
Tower of Glass on Park Avenue



Owner: Lever Brothers Company, New York; *Architects:* Skidmore, Owings & Merrill, New York; *Structural Engineers:* Weiskopf & Pickworth, New York; *General Contractor:* George A. Fuller Co., New York. *Steel Fabricator and Erector:* Bethlehem Steel Company, Bethlehem Pa.

This 24-story office building in New York City is called Lever House. It is owned by Lever Brothers Company, and occupies a 200-ft x 200-ft plot, including the entire blockfront between East Fifty-third and East Fifty-fourth Streets, on Park Avenue.

Lever House strikes a note of freshness and originality through its imaginative use of blue-tinted heat-absorbing glass, and the illusion it creates of not having a street floor. At the street level the structure has an open patio under the main portion of the building. The slender 53-ft-wide tower helps the illusion at this point because its base is sheathed for one story in plate glass. At the center of the block the patio is open to the sky, and will eventually contain a garden and pool.

The second floor of this distinctive new building covers the entire block, around an open court. Its third floor is enclosed in glass from floor to ceiling, and contains an employees' cafeteria, facing on a terrace. There is also a basement garage for 55 cars.

All the tower floors have approximately 6000 sq ft of office space, with most floors having private offices along the south wall. The total floor and roof area is 274,000 sq ft.

Lever House is fully air-conditioned. It has fluorescent troffer lighting, acoustical ceilings, cellular steel floors, continuous fixed windows, and blue curtain wall spandrels of wired glass.

Fabrication and erection of the 3542-ton steel frame for Lever House was handled by Bethlehem.

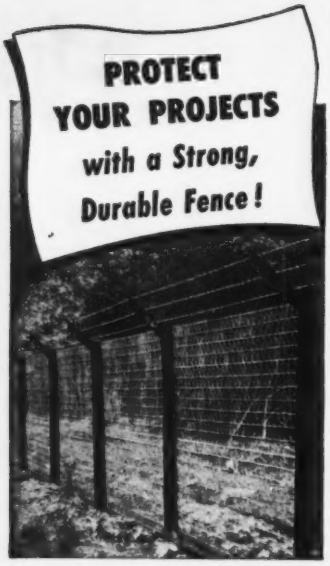
SPECIAL WIND BRACKETS—The tower of Lever House is so narrow, in relation to its height, that unusually heavy wind connections are required to carry the wind load to the foundations. As indicated in the accompanying sketch, this is accomplished by means of beam stubs and tees.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

FABRICATED STEEL CONSTRUCTION

BETHLEHEM STEEL



Fence built with Koppers Pressure-Creosoted Posts and heavy wire.

● Your completed projects, particularly those engaged in defense work, need good protection. And a fence built with Koppers Posts and heavy wire provides that protection.

Durable . . . Economical

Koppers Posts are made from sound, strong wood. They are pressure-treated with creosote to protect them against decay and termites. The pressure-treatment method is identical with that used by Koppers to protect utility poles, foundation and marine piles, and the timber in highway bridges. Koppers Posts give decades of service, making them extremely economical. They require no painting, and they never rust.

Other Preservatives

Koppers Posts, when treated with creosote, have a dark, warm color. They blend nicely with most surroundings. However, if you prefer wood posts that are easily paintable, Koppers will use a preservative other than creosote.

All Sizes Available

Koppers manufactures posts in any size you want — in any diameter, in any height. Besides fence posts, Koppers makes many types of treated highway posts. Write us for further information.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

KOPPERS
PRESSURE-TREATED
WOOD

KOPPERS

TECHNICAL COMMITTEE of the ASTM, composed of representatives of consumers, producers and general-interest groups, debates a proposed specification for steel.

ASTM reaches 50th birthday; vitally affects U. S. economy

When you order structural steel how do you know how strong it is? When you buy cement, how do you know how long it will take to set? When you need to replace a nut, how do you know the threads on the one you purchase will match those on the bolt?

It's hard to believe that at the turn of the century you might not have been able to answer these questions. Today, the answer is found in the fact that the materials are manufactured to "ASTM Standards". And in the latest edition of the official Book of ASTM Standards you can find the properties of materials that consumers have indicated would generally meet their requirements and that producers are willing to supply at a reasonable cost.

These standards, upon which our mass-production economy heavily depends, are the work of the American Society for Testing Materials, which celebrates its 50th anniversary in June.

Since its formal incorporation in Pennsylvania in 1902, the organization has concentrated on the promotion of knowledge of engineering materials and standardization of specifications and methods of testing. It actually started in 1898 as an American committee of the International Association for Testing Materials. But it was soon evident to the American group that a separate and independent society was needed to carry out the work on standardization of specifications in North America.

In those days, general conditions of buying and selling were primitive compared with present practices. Variability in products offered by the producer and in the demands of the consumer; lack of knowledge of properties of products; ignorance of exact requirements; and inability of buyers and sellers to agree on specifications—these and many other differences of viewpoint pointed up the need for definite, standardized specifications. ASTM met the challenge, setting up committees of experts in each field to develop the badly needed set of standards.

● **Hundreds of committees**—In its many technical committees are concentrated great authority and autonomy for both standardization and re-

(Continued on page 89)

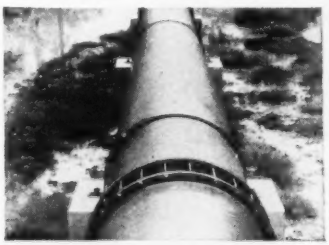
Got EXPANSION-CONTRACTION problems in the pipeline you're designing?

A 16" Dresser-Coupled water line across the Colorado River at Grand Junction, Colorado. Dresser-Coupled to assure Flexible-Tightness despite longitudinal stresses and traffic vibrations that would open a rigid line. Easily installed Dressers have given dependable service here since 1933.

Provide an economical solution to expansion-contraction troubles in your pipeline plans. Specify a Dresser-Coupled steel line. Dresser Couplings are designed to absorb longitudinal stresses that spring leaks and build up maintenance costs on other lines. Dressers can be installed in minutes, using only a wrench, and no special skill is needed. And once installed, you have a permanent, "Flexible-Tight" line that gives years of virtually maintenance-free service.

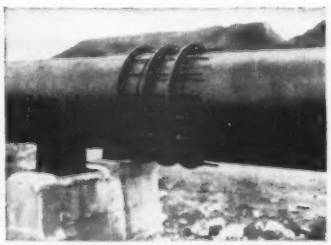
Dresser Couplings on every joint eliminate the need for expansion joints. However, for lines subject to extreme longitudinal stresses Dresser Expansion Joints are your best solution. They're field proved for many years on oil, gas, water, gasoline, low-pressure steam, and other piping . . . and they're economical . . . easy to install.

Mail the coupon below for detailed information on Dresser Expansion Joints . . . and engineering reports on recent Dresser Coupling installations.



A section of Savannah's new 42" Dresser-Coupled water line crossing swampy ground on concrete pile bents. Flexibility of couplings protects line against stresses.

Another Dresser-Coupled installation in Chicago, Ill. Dressers harmlessly absorb underground stresses beneath city streets where joint failures would be extremely costly.



Style 63 Dresser Expansion Joint—one of 4 types available to accommodate pipe movements up to 10" and more. Efficient, well-proved, and economical for most all types of lines.

DRESSER

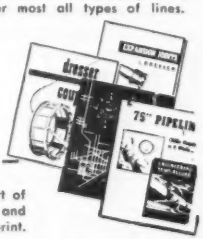
"FLEXIBLE-TIGHT"

COUPLINGS

Dresser Manufacturing Division,
319 Fisher Avenue, Bradford, Pennsylvania
(One of the Dresser Industries)

GET THESE FOLDERS NOW!

Interesting engineering data on varied types of lines installed with Dresser Couplings. Also Expansion Joint Catalog. This is file material.



Gentlemen: Please send me your "Report of Dresser-Coupled Lines", Expansion Joint and Style 38 Catalogs and "Bridge River" reprint.

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Built to Resist Tube Swelling

...and to withstand toughest use

TUBE SECURELY LOCKED BY SPECIAL STAINLESS STEEL INNER WIRE BRAID

Illustration shows, in magnified detail, the exclusive protection feature—special stainless steel inner wire braid—you get only with CONCORD #20 STEAM HOSE. Promotes extra safety and longer hose life—fights tube swelling.

This famous BWH hose features a structural "exclusive" that's there for one purpose: *to fight tube swelling under continuous high pressure.*

Protection found only in CONCORD #20 STEAM HOSE, this consists of a tough inner lining of stainless steel wire braid. This helps assure retention of original inside hose diameter . . . acts against swelling and constriction of tube . . . promotes full flow of steam and easy recoupling in the field when necessary.

Other construction features of CONCORD #20 include: two or three braids (depending on size) of alternate high tensile steel wire and rubber layers firmly bonded over outside of tube . . . to provide maximum burst protection and safety; asbestos braid gives positive cover adhesion and serves as cover insulator; finally, the rugged, abrasion-resistant cover is built to withstand severest abuse.

FLEXIBLE . . . TOUGH . . . DEPENDABLE, that's CONCORD #20 STEAM HOSE. Put it to work for you now, get in touch with your nearby BWH distributor today.

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Another Quality Product of

BOSTON WOVEN HOSE & RUBBER CO.

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Perspective . . .

search activities. Currently, there are at least 2,000 main committees, sections and related sub-groups. Frequently, at national meetings of the society there may be more than 500 committee meetings in a 5-day period.

One of the basic reasons for the widespread acceptance of ASTM standards rests in the make-up and procedures of the technical committees that originate and draft standards. In all committees, adequate representation by technical men is required for both producers and consumers, plus a third independent or general interest group. Acceptance of a specification requires letter-ballot approval by committee and society membership. Usually, specifications are developed to a form agreeable to all parties prior to voting, so that approval is practically unanimous.

If it were not for the work of the engineers who serve on the myriad committees of ASTM, the functions they are performing might have been carried out instead by the government. The chances are that in that case specifications would have been established arbitrarily and not always in the best interests of taxpayers.

Under the ASTM set-up, consumers say what they want; manufacturers say what it will cost, and weigh the practicability of the proposals. Finally, among both groups and other interested people, a compromise is reached. As a result of this method, millions of dollars in production costs are saved annually.

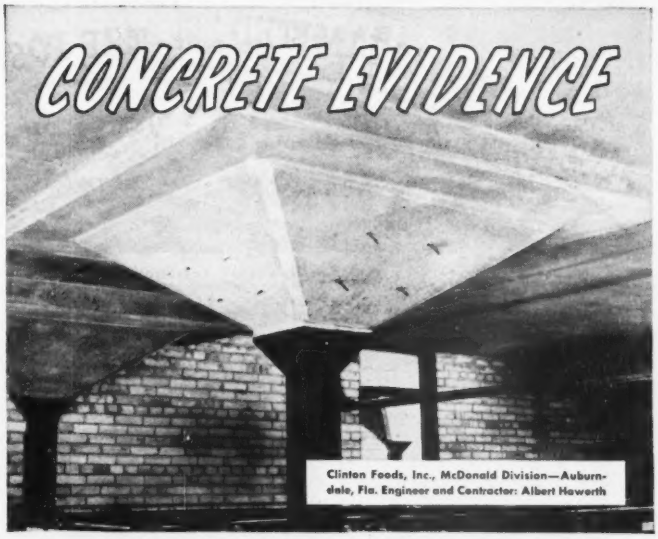
Some of the technical committees are so large that they are practically small societies in themselves. Committee A-1 on Steel, organized in 1898, currently has over 350 members, with more than 150 standards in its charge.

• A clearing house for standardization—In 1918, ASTM joined with the American Society of Civil Engineers, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, and the American Institute of Mining Engineers to establish the American Standards Association. This was to provide a means whereby standardizing organizations might coordinate their work and thus prevent duplication of effort—a clearing house for standardization.

Enforcement of its standards is beyond the scope of ASTM, but use of ASTM specifications is widespread, because they are competent, unbiased and widely applicable.

As developments and advances in technology take place, standard re-

(Continued on page 91)



MASONITE CONCRETE FORM PRESDWOOD

Can be re-used many times!

"Smooth surface every time," some contractors report, saying they get as many as twenty applications from the same panels of Masonite Concrete Form Presdwood.® This is just one of the many ways you can cut costs on smooth-surface work by using this strong, all-wood material. Other advantages are:

Here's what the Engineer-Contractor Says:

Albert Haworth

27 March 1952

Masonite Corporation
111 West Washington Street
Chicago 2, Illinois

Attn: Mr. T. B. Gamble

Gentlemen:

We were delighted with the results obtained with Masonite Concrete Form Presdwood on the building for the McDonald Division of Clinton Foods. We used it for forming the columns, beams and floor slabs.

We used the same boards six times on this job. We are happy to recommend good form board to other engineers and contractors.

Sincerely yours,

ALBERT HAWORTH

- **Hand-rubbing practically eliminated.**
- **Low first cost—low cost per use.**
- **Grainless—won't split, splinter or crack.**
- **Fewer joints with accurately cut 4' x 12' panels.**
- **Can be curved for arches, columns, etc.**
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- **Insures complete, uniform hydration.**

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Better Hardboards for Better Building

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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IMPROVES HEATING EFFICIENCY WITH WELDED PIPING

ARC welding the radiation piping direct to the grandstand framing has achieved an efficient heat transfer system at low cost. The radiant heating system involves 13,700 feet of pipe, ranging from 1¼" to 3" diameter. The design provides for an average 30 degree rise in temperature over the outside readings and costs only $1.17 per square foot.

Cumbersome and costly methods of hanging pipe with carriers have been eliminated by welding black iron pipe to the welded steel framework. The pipe has the same coefficient of expansion as steel, permitting the solid, unit construction, virtually integrating the grandstand into one giant radiating unit. Welding also enables headers and other fittings to be fabricated at low cost right on the job. It permits pipe to be installed in restricted areas where traditional methods would be costly and often impossible.

Simpler Construction *of heating system at Sportsman's Park, Phoenix, Arizona, is made possible with welded pipe. Headers and supports are fabricated at low cost from pipe. Resulting construction is permanent and trouble free.*

SIMPLIFIES CONSTRUCTION

Maximum Flow *of hot water through circulating system is assured with welded piping. System is 1¼" pipe welded direct to deck plates to give maximum transfer of heat to grandstand frame.*

SPEEDS INSTALLATION

Eliminates Hangers *by arc welding hot water piping direct to treads and risers, using Lincoln "Fleetweld* 5" electrodes and "Shield-Arc*" DC welders.*

*Preferred standards for electrodes and welders on quality work

CUTS COSTS

Bulletin 403, Welding Guide, free on request. Write to Dept. 133,

THE LINCOLN ELECTRIC COMPANY

Cleveland 17, Ohio

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

Perspective . . .

quirements are revised. Thus, there is a continuing output of standardized specifications and tests, with a minimum of red tape and delay.

In 1913, there were 133 ASTM standards; just before Pearl Harbor, there were 952. Now, there are 1,850 standards. The 1952 edition of the official Book of ASTM Standards, available late this year, will total 10,000 pages in seven parts.

• **Emergency standards**—To expedite the production of important materials and products, and to conserve critical and strategic materials during World War II, the society issued about 40 emergency standards and some 200 emergency alternate provisions. Many of these later were embodied in War Production Board orders and became mandatory. Now again, a number of emergency alternate provisions are being issued, especially for steel and rubber products.

As of March, 1952, there were 7,200 ASTM members, largely concentrated in the United States and Canada, but with many throughout the world. About 5,150 are individual members, government department and libraries; about 1,800 are companies and associations; and 250 are sustaining members. Total income from dues, 1899 to 1901, was only $345. This year's budget totals $629,000.

• **Timely service**—A current example of the ASTM's timely service is its aid to the Office of Defense Mobilization. The organization has been asked to develop methods of conservation of scarce materials. To carry out this work, the society has employed a staff engineer. He is Howard S. Phelps, formerly engineer in charge of the testing division of the engineering department of the Philadelphia Electric Co. The expenses of the work will be shared by the society and the Office of Defense Mobilization. The first project that will be undertaken concerns the conservation of nickel.

The phenomenal record of ASTM in its 50 years of existence may be attributed to the growing recognition throughout industry and government of the importance of the society's work to the well being of our economy. That this recognition is so well established is due in no small measure to continuing intelligent leadership from a complete headquarters staff and to the hard and serious work of the membership cooperating in a democratic way on the committees.

DESIGN FOR:

Power that "Hangs On"

In these Lorain L-820's operating in a Pennsylvania strip mine, a Twin Disc Hydraulic Power Take-Off transmits power that "hangs on." A Model E Twin Disc clutch is also employed to permit a complete disconnect.

Power "hangs on" to keep the job moving when transmitted through a Twin Disc Hydraulic Power Take-Off.

For the engine *cannot be stalled by digging conditions.* The engine will continue to work at its *most effective torque* until it picks up the load, or is disconnected, even with the power take-off output stalled.

Acceleration of the load is smooth and rapid since the coupling slip, cushions the drive and permits sustained engine horsepower output.

And just as the fluid drive *increases* work output, it *reduces* maintenance. "Shocks" never strike solid resistance . . . digging stresses and resulting strains are "absorbed" by the Twin Disc Hydraulic Power Take-Off.

It pays to put power to work through a Twin Disc Hydraulic Power Take-Off. Bulletin No. 144-B gives complete details.

P. S. Try Twin Disc industrial Fluid drives on your conveyors, too. You can start them fully loaded.

Clutches & Hydraulic Drives

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

DANTE PLACE
PUBLIC HOUSING
PROJECT
BUFFALO MUNICIPAL
HOUSING
AUTHORITY

Bids on alternate designs show reinforced concrete saves 6.76% . . . cuts steel requirements 50%

In planning this 616-unit public housing project, the Buffalo, N. Y., Municipal Housing Authority ran exhaustive cost studies to determine which type of building frame would be less expensive—reinforced concrete or structural steel. Costs for the project had to be estimated closely, before appropriations could be made.

Engineers of the Housing Authority prepared a complete floor and column design for one building—for both structural steel and reinforced concrete. In addition, a separate structural steel design was prepared by an outside engineer. Then all three designs were submitted to contractors for preliminary pricing.

The results are shown on the opposite page. Reinforced concrete won hands down. It offered a clear saving of 6.76% of the general contract cost, or $270,038.00! Furthermore, reinforced concrete used 2,350 fewer tons of steel, urgently needed for national defense.

Savings like these are typical of those realized by builders all over the country with reinforced concrete. And reinforced concrete *is not only* economical . . . it is inherently firesafe, and provides a permanent, rugged structure which is highly resistant to wind, shock, and quakes.

On your next structure, *design for reinforced concrete!*

ARCHITECTS: Backus, Crane & Love;
MECHANICAL ENGINEERS: Boman & Candee;
STRUCTURAL ENGINEER: James N. De Serio, P.E.

saved ...$270,038.00

AND 2,350 TONS OF STEEL

BY BUILDING WITH

REINFORCED CONCRETE

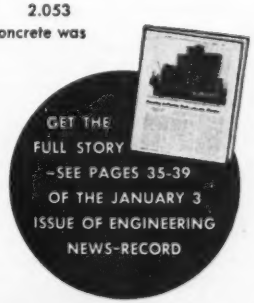
COSTS PER SQUARE FOOT (Preliminary Designs)

	Concrete Frame	Steel Frame Design #1	Steel Frame Design #2
Engineer's Estimate	$1.825	$2.335	$2.302
Contractor A, N. Y. C.	1.68	.....	.....
Contractor B, N. Y. C.	1.81	.....	.....
Contractor C, Buffalo	1.945	2.499	2.41
Contractor D, Buffalo	2.178	.....	2.053
Contractor E, Buffalo	No estimate, but stated concrete was cheaper		

ESTIMATED STEEL (Tons)

	Steel Frame	Concrete Frame
Structural steel	3,400	0
Shelf angles for lintels	200	100
Reinforcing steel	800	2,100
Total	4,400	2,200*

*Actual design requirements were 2,050 tons—a net saving of 2,350 tons of steel.



SAVING IN FRAMING COSTS

Low structural steel estimate	$2.053 per sq ft
Low concrete estimate	1.680
Saving	0.373
For 616,644 sq ft of supported floor area:	
Saving in framing costs	$230,008
Saving in brickwork	28,030
Saving in plaster, partitions, etc.	12,000
Total indicated saving	$270,038

CONCRETE REINFORCING STEEL INSTITUTE
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Helping you solve today's toughest CONSTRUCTION PROBLEMS

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WENDELL H. DAVIS (left) receiving award from Brig. Gen. John S. Seybold, ass't chief of engineers for personnel and administration.

Suggestion saves $3 million

Wendell H. Davis, director of the printing of drawings at Gravelly Point, Md., headquarters of U. S. Army Corps of Engineers has been awarded $1,606.65 for a suggestion that will save about $3 million a year for the government.

Davis, a 20-year man with the corps, won the award for a suggestion that resulted in changing the method of duplicating drawings from conventional methods to a single positive to positive technique through use of autopositive film and paper prints.

The award is the largest paid to an Army civilian employe since 1949 and was one of the six highest paid since inauguration of the Army suggestion program in 1943. Davis also received the highest award of National Association of Suggestion Systems.

Davis began work on his idea when he saw need for a shortcut. He noticed that there was no positive-to-positive method on the market.

• **The method**—The new method eliminates the negative process and the Van Dyke. A film is made of the pencil drawing. The engineer's office then makes a paper print in reverse. This reverse drawing goes to district engineers where an upright print is made.

By this method the finished drawing is only three processes removed from the original drawing instead of the six of former times.

Standard 30x42 prints are sent out from Davis's office and in 1951, 4906 auto-positive films were made from which 225,385 drawings were reproduced.

The idea was adopted only after considerable testing and has proven successful.

• **Wendell Davis**—Prior to his assignment with the Military Construction Division in Washington, D. C., he served with the District Engineer in Chicago from 1931 to 1941.

He attended the Lewis Institute of Chicago and spent eight years as a construction engineer with the Warner Bros. Construction Co., and the Commonwealth Edison Co., in Chicago before entering government service.

Another award

In Coulee Dam, Wash., H. C. Brunyer, a Bureau of Reclamation inspector received a $100 award for an idea that saved the government nearly a quarter of a million dollars.

(*Continued on page* 98)

COBI PILES ARE PROVING SENSATIONAL

HERE ARE SEVEN REASONS WHY YOU SHOULD SPECIFY AND USE COBI PILES

1. COBI PILES drive straighter, due to the constant cross section of the heavy mandrel.
2. COBI PILES are more economical, they are driven in intimate contact with the soil and screw themselves into the ground.
3. COBI PILES are cast in forms that are watertight. Every seam and splice is continuously welded.
4. COBI PILES maintain the original shape and form of the shells. They are driven as an integral part of the mandrel.
5. COBI PILES are largest where the need is greatest, down below.
6. COBI PILES show less settlement under heavy loads.
7. COBI PILES are anchored in the ground, they resist uplift best.

EVERY early promise of the Cobi cast-in-place pile has been fulfilled after more than 300,000 feet have been driven during the past two and a half years. The Cobi Pneumatic Mandrel, which is expanded inside the Armco Hel-Cor shell with 125 lbs. per square inch of compressed air is now recognized as the most revolutionary advancement since invention of the cast-in-place pile.

This shell has been dropped into a "hole in the ground", and riggers line up the mandrel tip before it is dropped into the shell and expanded. The tip conforms exactly to the inside surface of the boot, forming a solid driving head.

Every foot of the Cobi pile is driven. They screw themselves into the ground. . . . They drive straighter and show less settlement under heavy loads. In East Hartford two test piles showed only 0.22 of an inch net settlement when loaded with one and a half times the designed load.

In East Hartford in February and March 155 Cobi piles were driven for the foundation of a new sewage treatment plant, each about 128 ft. long. Here was used the longest mandrel ever made, — 105 ft. long. The continuously welded Armco shells were 103 ft. long. This photo shows how they were handled.

Cobi Piles are Driven Under License By

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DAREX AEA

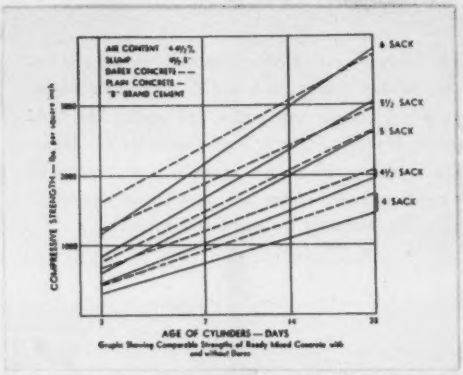
The only *catalyzing* air entraining agent

makes stronger concrete

Darex AEA is the only air-entraining agent to contain a catalyst which makes available more of the inherent strength of portland cement without entering into chemical combination with any of the hydration products. This, as shown in the accompanying table, minimizes or prevents any loss in strength resulting from entrained air . . . makes lean mixes stronger than plain concrete!

Darex AEA is the one air-entraining agent specifically formulated for making air-entrained concrete. Highly uniform and not super-sensitive, it can be depended upon for close, error-saving control of air-entrainment in ready-mixed or job-mixed concrete.

Only with Darex AEA . . . used world-wide in more concrete construction than any other air-entraining agent . . . can you get all the advantages of air-entrainment *plus these exclusive features.* The facts to substantiate this statement are the basis of a 20-page illustrated booklet which every man interested in high quality air-entrained concrete should read. Send for your copy today!

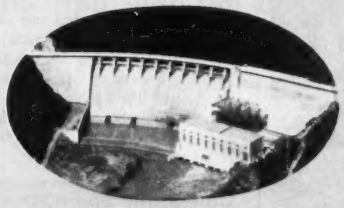


CATALYTIC! See in this graph how the catalyst used exclusively in Darex AEA minimizes or prevents any loss of strength resulting from the entrained air! In lean mixes, Darex concrete is stronger than plain concrete.

Test No.	Slump	Air (%)	Test No.	Slump	Air (%)	Test No.	Slump	Air (%)
1	3 in.	4.5	11	3 in.	4.5	21	3 in.	4.0
2	3 in.	4.0	12	3 in.	3.8	22	3 in.	4.0
3	3½ in.	**	13	3½ in.	3.5	23	3 in.	4.0
4	3½ in.	4.4	14	3½ in.	3.8	24	3½ in.	4.1
5	3½ in.	4.5	15	3½ in.	4.0	25	3½ in.	4.1
6	3½ in.	4.0	16	3½ in.	4.3	26	3½ in.	4.2
7	3½ in.	4.0	17	4 in.	4.0	27	3½ in.	4.0
8	3½ in.	4.1	18	4 in.	4.0	28	3½ in.	4.2
9	3½ in.	4.1	19	3½ in.	4.3	29	3½ in.	4.2
10	3½ in.	4.0	20	3½ in.	4.1			

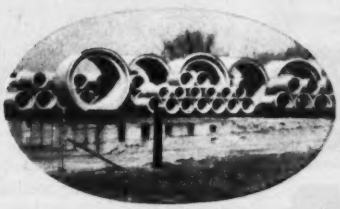
** Mix air test rejected.
Specifications called for ¾-in. topsize coarse aggregate, high early cement, 3-4 in. slump and 3-4 percent air content.

UNIFORM CONTROL! This series of tests, made by a ready-mix plant, shows that there is no difficulty in controlling air content when Darex AEA is used. For average concrete, the use of ½ to ¾ fluid ounces of Darex AEA per sack of cement will entrain approximately 3 to 5 per cent air. The exact amount to use will depend principally on the percentage and gradation of the fine aggregate in the mix.



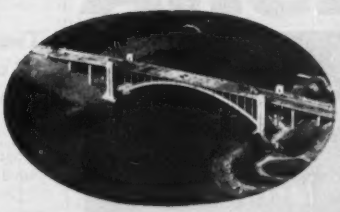
At McNary Dam, in the Columbia River, Darex AEA improved plasticity of the concrete, reduced bleeding and segregation.

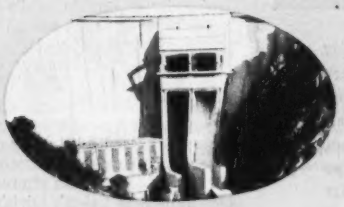
Veterans Administration Hospital, Wilmington, has a structural frame of Darex AEA concrete. Darex AEA made possible low slump concrete in heavily reinforced walls and slabs, with no appreciable honeycombing.



In Concrete Products, blocks, cast stone, pipe, pre-cast cribbing and curbing, Darex AEA is used to increase production and improve quality.

Mystic River Bridge, Boston, was paved with Darex AEA concrete to increase resistance of the pavement to de-icing chemicals and to freezing and thawing.





Zezere Dam, Portugal, is representative of many overseas uses of Darex AEA, used *throughout the world* in more concrete construction than any other air-entraining agent.

Other Dewey and Almy Products For the Construction Industry

DARACONE

Penetrating type, high silicone content water repellent for waterproofing masonry construction on the exterior and above grade. Actually repels water. Clear, colorless, leaves no film, dries quickly.

DARALITE

Air-entraining agent for use with lightweight aggregates in non-structural applications where high percentages of entrained air are desired.

DARAKOTE

An anti-stripping additive that improves the adhesion of asphalt to aggregates in the presence of moisture. Permits road work earlier in the Spring, later in the Fall . . . improves results all through the year. Sold both for use in the field and, in concentrated form, to refineries for use in the production of treated asphalt.

Also air-entraining agents and grinding aids for use in the manufacture of cement.

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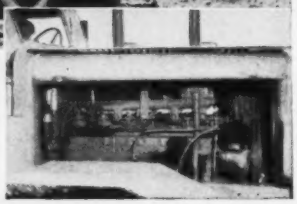
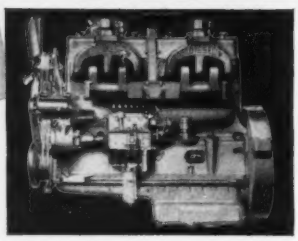


PAYLOAD POWER

WAUKESHA Diesel



WAKD Super-Duty DIESEL
—Six cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displ.

● Where the digging is toughest and where the hauling is heaviest, and hardest... where turns twist, and grades are steep and stiff—Waukesha Super-Duty Diesels take the jobs through, and come back for more. The truck shown hauls an average payload of 30 tons at an elevation of 6400 feet from a quarter to a half mile 16 hours a day. It makes about 38 trips a day. Waukesha has put all this payload performance into its Diesels—by 25 years of Diesel development and research—with many exclusive Waukesha features. The patented spherical combustion chamber controls combustion to meet operation needs—giving the engine lively responsive acceleration, smoothness and complete clean burning for high fuel economy and low maintenance. For the *how* and *why* Diesel details, send for Bulletin 1415.

174

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles

Men and Jobs . . .

Brunyer's suggested use of a steel frame for seat construction to "set" the floating caisson for repair of the spillway bucket at Grand Coulee Dam shortened the programmed maintenance time two years, with a cost saving in excess of $200,000 on material and labor.

California engineer gets state commendation

Engineer John Hunt Skeggs' service with the California Division of Highways has been commended in a resolution adopted by the California Senate.

Among Skeggs' achievements, the resolution lists: completion of Skyline Boulevard, Bay Shore highway; realignment and widening of El Camino Real; rebuilding of the Los Gatos-Santa Cruz highway; location and construction of approaches to the San Francisco-Oakland Bay bridge and the Golden Gate bridge and building the major tunnels in California's District IV—Broadway low level tunnel, Waldo tunnel and Funston tunnel.

Skeggs, who retired April 1, received his engineering training at Alabama Polytechnic Institute and began his career in highway engineering in 1919 as assistant division engineer in Divi- IV.

Two public members named to construction panel

Two new members of the Construction Industry Stabilization Commission were appointed recently by the Wage Stabilization Board to round out a full membership.

Duncan Campbell was named a public member to replace Joseph Shister who returns to the faculty of the University of Buffalo, while Laurence E. Seibel was appointed an alternate public member.

Mr. Campbell, former mediator with the Public Works Administration and Federal Works Agency, has served in various other governmental posts connected with labor relations. Mr. Seibel, Executive Director of the CISC, was formerly an attorney in the Department of Labor's Division of International Labor Affairs.

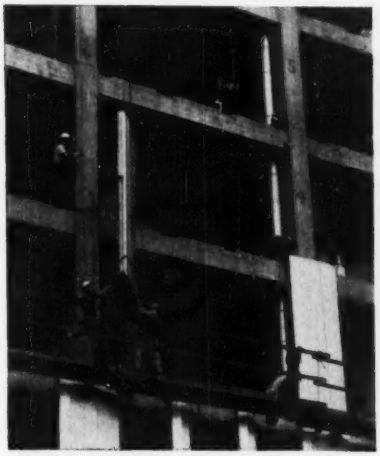
Careers . .

• **Appointed**—New dean of the M.I.T. School of Engineering is **Admiral Edward L. Cochrane**, since 1947 head of the department of naval architecture and marine engineering at M.I.T. . . **Wade B. O'Brian**, aide to Ezra M. Kuhns for 36 years succeeds him as

(Continued on page 101)

The wall material of tomorrow is available to you today—

U·S·S 17 (TYPE 430) Stainless Steel



A 48" spandrel of Type 430 Stainless Steel backed with approximately 4½" of light-weight concrete is being guided into place on one of the three buildings in the new Gateway Center project, Pittsburgh, Pa. Panel weight is one ton. Owner: Equitable Life Assurance Society of the United States. Builder: Starrett Bros. & Eken, New York. Panels by United Steel Fabricators, Wooster, Ohio. Architects: Eggers & Higgins and Irwin Clavan, New York.

ARCHITECTS must consider U·S·S 17 (Type 430) Stainless Steel when searching for the most practical, economical and available exterior panel wall material.

This grade of stainless steel has proved to be suitable for insulated and non-insulated panels on many types of buildings, including office buildings, plant office buildings, warehouses, and power plants. U·S·S 17 (AISI Type 430) is available today without CMP tickets; it is not affected by the nickel shortage that limits the current use of some other grades of Stainless Steels.

An outstanding example of the use of insulated panels of U·S·S 17 Stainless Steel are three multi-story office buildings now under construction in Pittsburgh's new Gateway Center. Here panel installation was accomplished at the almost unbelievable rate of 17 floors in 15 working days. And Stainless Steel's permanence and ease of maintenance will mean important savings throughout the life of these buildings.

The versatility of Stainless panels was demonstrated effectively on a plant of the E. F. Hauserman Company in Cleveland, Ohio. Here a building constructed with Stainless Steel walls was enlarged by removing panels, adding a wing larger than the original structure and then using both the old panels and additional new ones to enclose the new wing.

Our new booklet contains full details on Stainless Steel panels and their use. You'll find it valuable in planning your current work as well as future projects. Use the coupon to obtain your copy and indicate if you would like additional information direct from panel manufacturers. Remember that United States Steel only produces the Stainless Steel; it does not fabricate panels.

Here you see how a plant built with Stainless Steel wall panels was enlarged to several times its original size. The photograph shows the partially completed addition with panels removed from the original structure being reused. Owner: The E. F. Hauserman Company, Cleveland.

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☐ Please arrange to have fabricators of Stainless Steel wall panels send me literature on their particular type of construction.

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MODERN MACHINERY

WHEELERS

Here's the Tractor
Equipped and Engineered for ALL your jobs!

RTI 5000 pound and UTIL 12000 pound front axle capacities permit larger loads. These larger loads are practical because MM exclusive front-end design makes it possible to steer them easily.

FRONT AND REAR-END ATTACHMENTS—MAKE BOTH ENDS PAY.
Longer lasting, harder hitting from radiator to drawbar.

RTI and UTIL Wheeler engines are MM built to give that extra heavy punch when you need it. They have special high-turbulence combustion chambers for progressive burning and longer power impulse. Coolant is first directed to critical heat areas by MM controlled cooling. For outstanding performance compare the low-speed, high-torque of these big, hard hitting MM quality leaders against ordinary high-speed, low-torque engines. Balanced weight and power of MM Wheelers is assured because the transmissions are built to handle full engine torque continuously in any gear. New double-disc brakes operate on the transmission counter shaft, have individual pedal control for rear wheels.

MM EXCLUSIVE FRONT-END CONSTRUCTION OFFERS YOU MOST SHOCK-FREE, EASIEST STEERING BUILT. YOU ARE ENTITLED TO SEE WHAT YOU BUY. COMPARE THESE POINTS FIRST—

- Special heavy Ross roller bearing steering gear.
- Needle bearings on steering knuckle pins and tie rods.
- Timken radial roller bearings support steering knuckle load.
- Timken wheel bearings—center line of tires inset over steering knuckle pins for pivot steering and elimination of road shock to steering wheel.

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA

Men and Jobs . . .

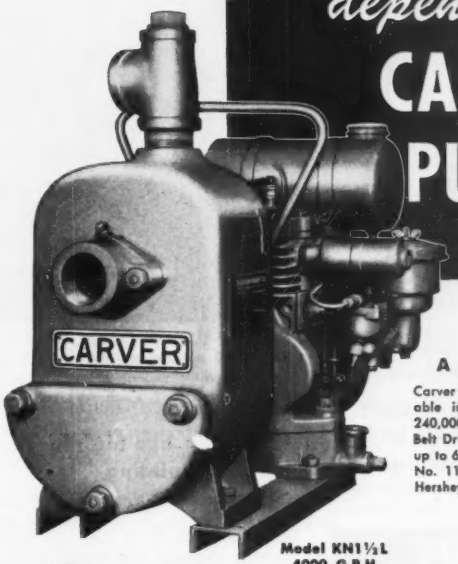
secretary-treasurer of the Miami Conservancy District, Dayton, Ohio, following Kuhn's resignation April 4. . . **Walter S. Douglas** and **Alfred Hedefine** have been admitted to partnership in the consulting firm of Parsons, Brinckerhoff, Hall & MacDonald, New York. . . **Lloyd L. Pilkinton** will become city planning engineer for Knoxville, Tenn., following a training period under the tutelage of Walter S. Smith, who now holds the post temporarily.

• **Elected**—New vice president of Burns & Roe, Inc., New York, is **Fred C. Schlemmer,** former construction manager of the firm. . . **W. H. Grisenthwaite** was elected president of the Canadian National House Builder's Association at its convention in Winnipeg.

• **Honored**—For outstanding work in directing his engineers in Korea, **Lieut. Col. Donald Rochester** was awarded the Order of the British Empire. Lt. Col. Rochester is currently on the directing staff of the Canadian Army Staff College, Kingston, Ont. . . Graveside services at Arlington Cemetery honored **Rear Admiral Robert E. Peary,** of the civil engineer corps, who discovered the North Pole April 6, 1909. . . **Harold W. Yost,** Phoenix, Ariz., received the Sidney Bedell award at the Arizona Sewage and Water Works Assn. convention for his work in planning an expanded water and sewage project for Phoenix. . . Of eight nationally-known engineers and industrialists to be honored for outstanding accomplishments in their fields at the University of Wisconsin Engineers' day May 2, two are civil engineers. **Robert C. Johnson,** president of the Siesel Construction Co., Milwaukee and **George P. Steinmetz,** chief engineer, Wisconsin Public Service Commission, Madison will receive distinguished service citations.

• **Resigned—Richard Martin** has resigned as Connecticut State Water Commission director to become town manager of Manchester, Conn. . . **W. H. Epperson,** Sacramento district construction supervisor for the California Division of Architecture, retired from state service April 1. . . Retiring after 32 years service with the U. S. Bureau of Public Roads is **William F. F. Wallace,** Assistant Arizona district engineer. . . **Frank M. Floryan,** engineer and chief estimator for F. H. McGraw and Co., Hartford, Conn., has resigned to form a new engineering and contracting firm, to be known as Frechette and Floryan, Inc., in Hartford.

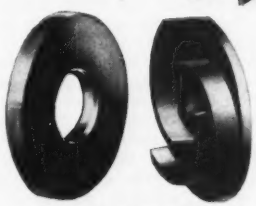
for the . . . Complete QUALITY LINE *depend on* CARVER PUMPS



Model KN1½L
4000 G.P.H.

A COMPLETE LINE

Carver Self-Priming Pumps available in all sizes from 4,000 to 240,000 G.P.H. Gas, Diesel, Motor or Belt Drive. Also Diaphragm Pumps up to 6,000 G.P.H. Ask for Bulletin No. 110. Carver Pump Co., 1400 Hershey Ave., Muscatine, Iowa.



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Sturdy, wear-resistant replaceable liners and impellers are standard equipment in all Carver Contractor Pumps. When wear eventually occurs you don't replace the entire costly casing, as in ordinary pumps. Simply remove and install a new liner, a new impeller if necessary, and new pump efficiency is restored at nominal cost.

Another Carver Quality Feature!

A QUALITY LINE

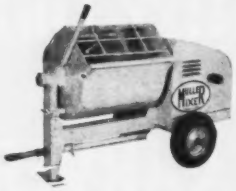
Quality is our strong forte — Every Carver Contractor Pump is designed and manufactured with one specific purpose in mind — to provide you with rugged dependable equipment, loaded with reserve power and stamina, to handle the toughest construction jobs. Nothing fragile about these pumps; no skimping on materials; no underpowering; no compromise of quality. Throughout their many years Carver pumps have earned an enviable reputation in the field for dependable, efficient and long-life service. We shall continue to build pumps that will perpetuate this reputation.

Specify Carver Contractor Pumps— your best buy for better performance.

CARVER PUMPS

CONTRACTORS—save money!

Mix plaster and mortar in a MULLER 3 FOOT MIXER



• An investment that will give you better plaster and mortar at far lower costs than old hand methods. Ideal for both inside and outside use. Holds full bag batch of most mixtures.

PRICE $312 (with electric motor)
$330 (with air-cooled engine)
FOB Metuchen, N. J.

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ROAD BUILDERS—Officers of the Wisconsin Road Builders' Association, named at the annual meeting recently at Milwaukee, Wis., are, from left: Francis J. Bloomer, Appleton, vice-president; Henry White, Milwaukee, secretary; N. M. Isabella, Madison, president, and A. J. Koch, Whitefish Bay, treasurer.—Milwaukee Journal Photo

Wisconsin has big plans for road building

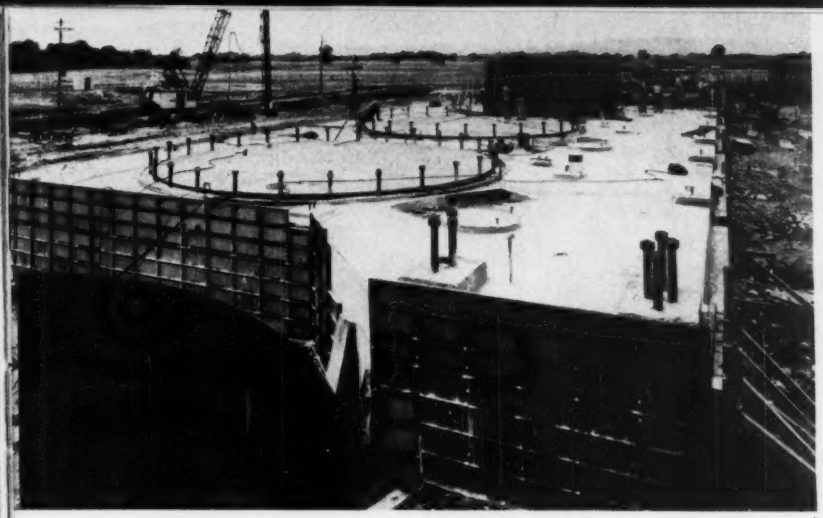
Wisconsin will spend $65,000,000 this year to build and repair 1,200 miles of roads, E. J. Roettiger, state highway engineer, told the Wisconsin Road Builders' Association at its recent annual meeting in Milwaukee.

Gov. Walter J. Kohler told the group that the state must give more attention to the building of expressways and to modernization of its existing through highways. He warned, however, that new highway development should not be undertaken at the expense of the state's existing network of farm-to-market roads.

Other speakers at the session included Paul Reinhold of Pittsburgh, Pa., president of the American Road Builders' Association; Thomas G. Letchworth of Washington, D. C., chief of the construction section of the Office of Price Stabilization; Burton F. Miller of Washington, D. C., manager of the contractors' division of the American Road Builders' Association; Joseph D. Bonness, Milwaukee, a contractor and president of the National organization's contractors' division, and Raymond E. Jensen, Madison, vice-chairman of the state highway commission.

WEST COAST APWA HEADS check plans for the first national American Public Works Association convention to be held in the Far West—at Los Angeles, Aug. 24-27. They are, left to right, C. Don Field, general chairman; W. M. Henderson, president of southern California chapter; and Milton Offner, regional vice-president. Field and Offner are president and secretary, respectively, of the Los Angeles Board of Public Works. Henderson is a recently retired Southern California Gas Co. official.

("Meetings" *continued on page 104*)



GPX helps speed Fairless Works construction

GPX plastic-faced plywood, the modern miracle material which has revolutionized concrete form use in countless applications, is now working production miracles for United States Steel Company's new $400,000,000 Fairless Works near Trenton, N. J.

Concrete forms of GPX are molding 700,000 cubic yards of concrete—10 million feet of contact area—for blast furnace-stove foundations, spread footings, coke bins, and gas holder forms at a record-setting pace.

GPX's rugged, silky-smooth surface allows contractors to re-use GPX forms over *30 times* . . . a tremendous saving in time, materials and labor. Large, lightweight GPX forms can be moved by only one man, eliminating costly crane-handling operations.

Send for this new folder on GPX if you have a job where smoothness, lightweight strength and ruggedness pay off. Write Georgia-Pacific Plywood Company, 610-4 North Capitol Way, Olympia, Washington, or get in touch with your nearest G-P office.

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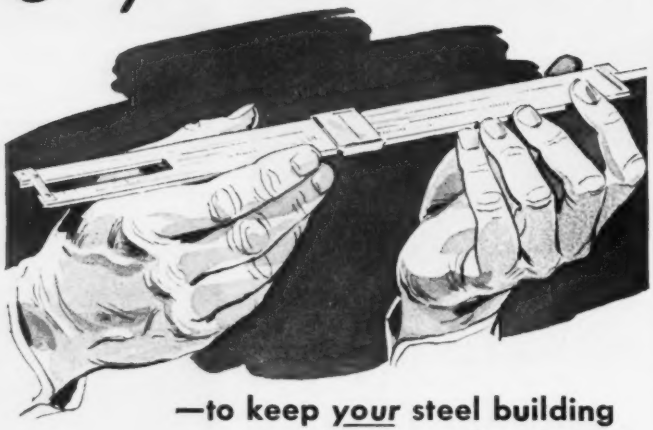

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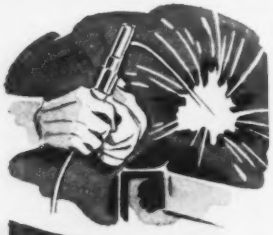

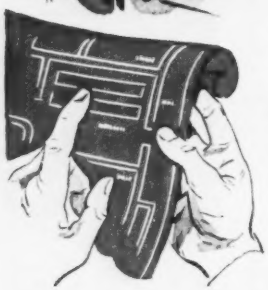

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Meetings . . .

Foremen tell engineers how to improve concrete

Some good advice on how to get better concrete at less cost was handed out by three concrete foremen at the April meeting of the Concrete Industry Board of New York City.

One of the best suggestions was advanced by Frank Cavaioli, a concrete labor foreman with W. J. Barney Corp. Urging engineers to specify concrete with greater workability, he expressed the belief that total costs would be lower if both more cement and more water were used. He believes a slump of 4½ to 5 in. is desirable.

Too much concrete is delivered to the job with no slump at all, Mr. Cavaioli said. Considerable time is lost in trying to place this concrete at great expense. Frequently, also, water is added to increase the slump, but thus impairing strength of the mix.

Mr. Cavaioli made the intriguing proposal that an extra tank be added to mixing trucks, this tank to contain a mixture of cement and water. This mixture could be used to increase the slump of the concrete mix when necessary, without affecting the water-cement ratio adversely.

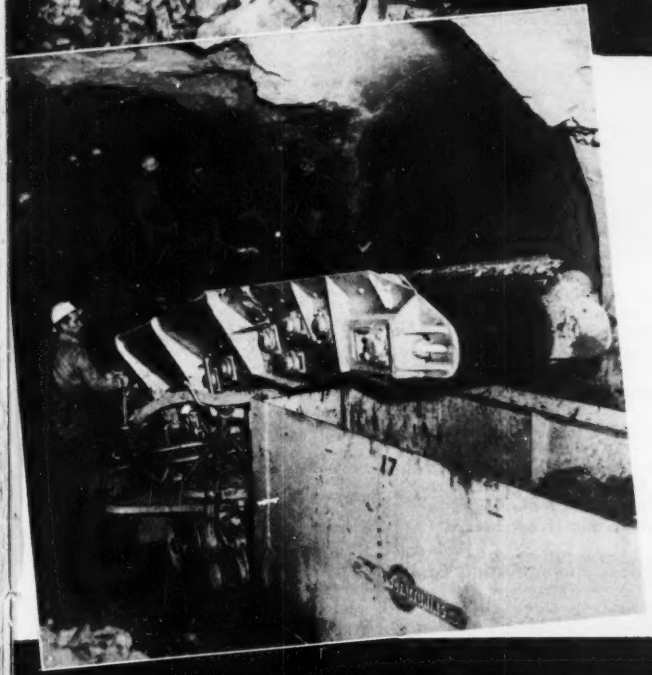
Jack Harrington, a lather foreman with Euclid Concrete Corp., called attention to poor reinforcing-steel detailing practices. Chief field difficulties arise, he said, from improper specification of bar bends. Sometimes, when design drawings are followed, the bars project beyond the concrete. Many designers also fail to check to see if the hooks they call for will have sufficient cover. Another common failing is the practice of asking for a 4-in. pipe to be embedded in a 4-in. slab.

Mr. Harrington also thought that time and money could be saved in handling of reinforcing bars at the site if bent bars were grouped separately from straight bars when shipped to the job.

Joseph Duggan, a carpenter foreman with Rizzi Construction Co., pointed out that money could be saved if concrete members were designed to permit stock sizes of lumber for forms.

In discussing Mr. Duggan's recommendation, Consulting Engineer J. Di Stasio said that his firm designed multistory concrete buildings so that changes in column sizes and concrete mixes were made only two or three times and only at specified floor levels. Thus, dimensions might be changed at the sixth and twelfth floors.

(*Continued on page 106*)



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Meetings . . .

CALENDAR

Concrete Reinforcing Steel Institute, The Greenbrier, White Sulphur Springs, W. Va., April 28-May 3.

N. Y. State Society of Professional Engineers, annual meeting, Hotel New Yorker, New York City, May 1-3.

American Water Works Association, Municipal Auditorium, Kansas City, Mo., May 4-9.

Highway Transportation Congress, National Highway Users Conference, Mayflower Hotel, Washington, D. C., May 6-8.

Missouri Basin Inter-Agency committee, Pierre, S. D., May 7-8.

Building Officials Conference of America, Detroit, Mich., May 12-15.

Industrial Wastes Conference, Purdue Memorial Union, Lafayette, Ind., May 7-9.

First World Conference, International Road Federation, Washington, D. C., May 8.

Society for Experimental Stress Analysis, Hotel Lincoln, Indianapolis, Ind., May 14-16.

U. S. Conference of Mayors, Waldorf-Astoria Hotel, New York City, May 15-17.

Rail Steel Bar Association, General Brock Hotel, Niagara Falls, Ont., May 19-20.

National Public Health Engineering Conference, annual meeting, University of Florida, Gainesville, May 20-21.

Western Association of State Highway Officials, Olympic Hotel, Seattle, Wash., June 5-7.

National Society of Professional Engineers, annual meeting, Tulsa, Okla., June 5-7.

Hydraulics Conference, State University of Iowa, Iowa City, Iowa, June 9-11.

International Organization for Standardization, tri-ennial meeting, Columbia University, N. Y. City, June 9-11.

Association of State Planning and Development Agencies, annual meeting, Nicollet Hotel, Minneapolis, Minn., June 15-19.

Conference on Marine Borers and Prevention of Deterioration in Waterfront Structures, St. Moritz Hotel, Miami Beach, Fla., June 11-13.

Conference, "Building in the Atomic Age", M.I.T., Cambridge, Mass., June 16-17.

Conference on Soil Stabilization, M.I.T., Cambridge, Mass., June 18-20.

American Society for Engineering Education, Dartmouth College, Hanover, N. H., June 22-27.

National Businessmen's Conference on Urban Problems, Portland, Ore., June 23-24.

Forest Products Research Society, annual meeting, Milwaukee, Wis., June 23-25.

American Society for Testing Materials, 50th anniversary meeting, Hotel Statler, N. Y. City, June 23-27.

American Institute of Architects, Waldorf-Astoria Hotel, N. Y. City, June 24-27.

Symposium on Earthquake and Blast Effects on Structures, University of California, Los Angeles, Calif., June 26-28.

American Society of Civil Engineers, spring meeting, Cosmopolitan Hotel, Denver, Colo., June 17-20.

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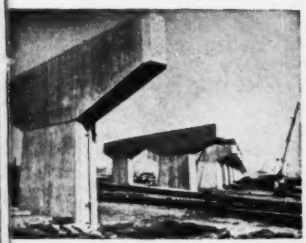

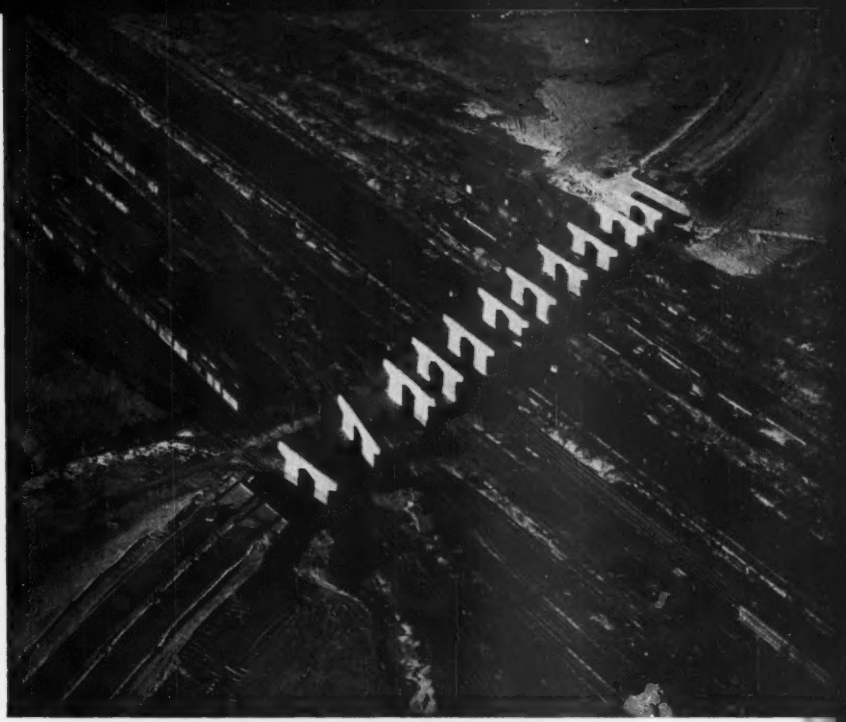

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Reports and Pamphlets

KEY TO SUCCESSFUL APPRENTICESHIP IN THE CONSTRUCTION INDUSTRY—A Guide to Joint Management-Labor Apprenticeship Committees, U. S. Department of Labor, Bureau of Apprenticeship, Washington, D. C.

STRESS DISTRIBUTION IN A HOMOGENEOUS SOIL—Research Report No. 12-F, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. 60¢.

SCOUR AROUND BRIDGES—Research Report No. 13-B, Highway Research Board, Washington 25, D. C. 45¢.

REFLECTORS AND NIGHT VISIBILITY—Bulletin No. 34, Highway Research Board, Washington 25, D. C. 90¢.

USE OF PARKING METER REVENUES—Bulletin No. 33, Highway Research Board, Washington 25, D. C. 60¢.

GROUNDWATER IN THE PEORIA REGION—Bulletin No. 39, Division of the State Water Survey, Urbana, Ill.

THE THERMAL EXPANSION OF CONCRETE—Technical Paper No. 7, Department of Scientific and Industrial Research, 5-11 Regent St., London, S.W.I.

LOAD AND DESTRUCTION TEST OF 160-ft. GIRDER DESIGNED FOR FIRST PRESTRESSED CONCRETE BRIDGE IN U.S.A.—International Association for Bridge and Structural Engineering, copies obtainable from M. F. Fornerod, The Preload Corporation, 211 East 37th St., New York 16, New York.

PUBLICATIONS, Tenth Volume, 1950, published by the General Secretariat, International Association for Bridge and Structural Engineering, Zurich, Switzerland.

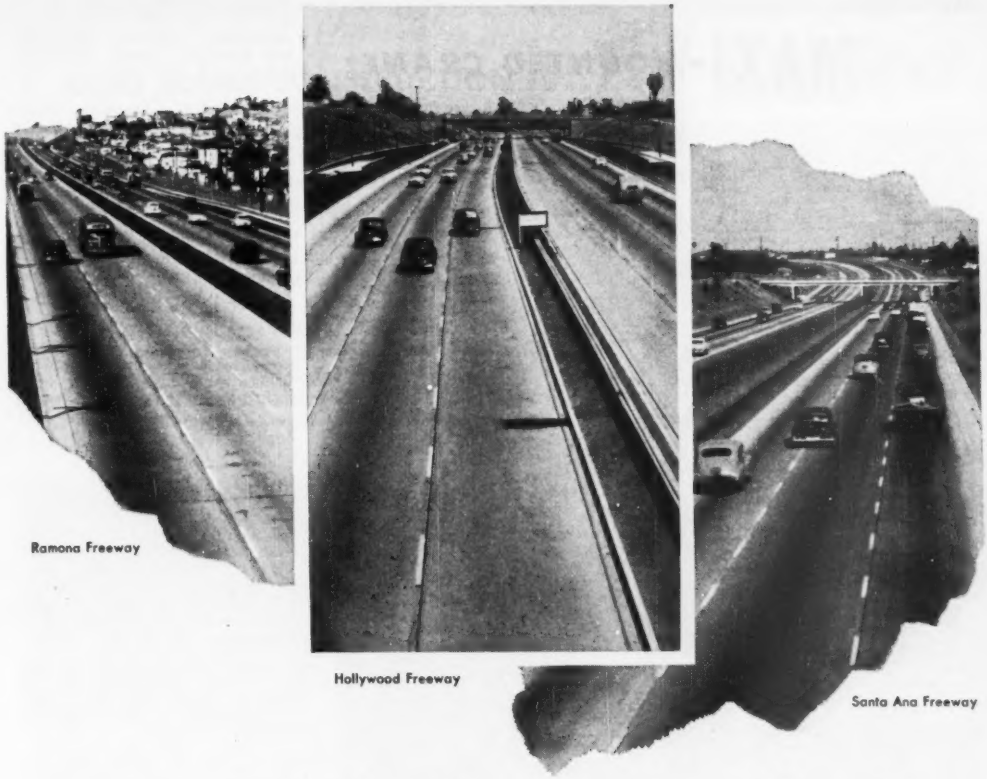
SABOTAGE AND PLANT PROTECTION—Panel discussion at the 39th Annual Meeting of the Chamber of Commerce of the United States, Washington, D. C.

CRITICAL FACTORS IN MANAGEMENT PLANNING—With a Section on A-Bomb Protection in Industry—Personnel Series, Number 138, American Management Association, 330 W. 42nd St., New York 18, N. Y. $1.25.

PLATING-ROOM CONTROLS FOR POLLUTION ABATEMENT—Ohio River Valley Water Sanitation Commission, 414 Walnut Street, Cincinnati 2, Ohio.

ACOUSTICAL TERMINOLOGY — American Standard. American Standards Association. 70 East Forty-fifth Street, New York 17, N. Y. $1.50.

TRIAXIAL TEST DATA ON STRUCTURAL PROPERTIES OF GRANULAR BASE MATERIALS—Part II, The Load Transmission Test For Flexible Paving and Base



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Hollywood Freeway

Santa Ana Freeway

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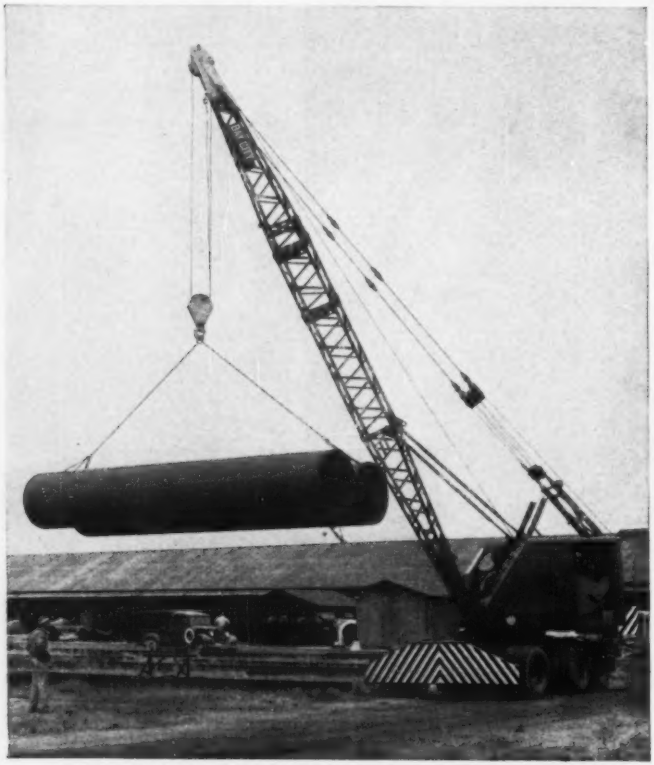

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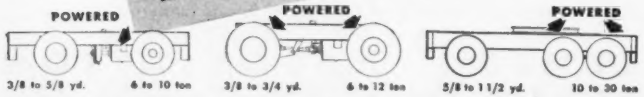

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Courses, Technical Development Report No. 144. Civil Aeronautics Administration, Technical Development and Evaluation Center, Indianapolis, Ind.

SOME FUNDAMENTAL PLANT-SOIL WATER RELATIONS IN WATERSHED MANAGEMENT—By Leon Lassen, Howard W. Lull, and Bernard Frank, Division of Forest Influences, U. S. Department of Agriculture, Washington, D. C.

TENTATIVE STANDARD SPECIFICATIONS FOR POWDERED ACTIVATED CARBON—American Water Works Association, 500 Fifth Avenue, New York 18, N. Y. 20¢.

BEAM AND COLUMN CONNECTIONS—Recommended Designs For Metal Arc Welded Mild Steel Building Structures. British Welding Research Association, 29 Park Crescent, London, W.1, England. 2s 6d.

WATER LEVELS AND ARTESIAN PRESSURE IN OBSERVATION WELLS IN THE UNITED STATES IN 1948—Part 3, North Central States (70¢); Part 4, South Central States (40¢); Part 6, Southwestern States and Territory of Hawaii (65¢); Geological Survey Water-Supply Papers 1128, 1129 and 1131. Obtainable from the Superintendent of Documents, Washington 25, D. C.

ROUGHNESS AND SKID RESISTANCE—Bulletin No. 37. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. 90¢.

REPORT OF COMMITTEE ON LAND ACQUISITION AND CONTROL OF HIGHWAY ACCESS AND ADJACENT AREAS—Bulletin No. 38. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $1.20.

FLORIDA HURRICANES OF 1950: HISTORY AND ANALYSIS—Bulletin Series No. 45 Florida Engineering And Industrial Experiment Station, University of Florida, Gainesville, Fla.

STONE EXPOSURE TEST WALL—Building Materials and Structures Report 125. National Bureau of Standards. Superintendent of Documents, Washington 25, D. C. 30¢.

SELF-SIPHONAGE OF FIXTURE TRAPS. Building Materials and Structures Report 126. National Bureau of Standards. Superintendent of Documents, Washington 25, D. C. 20¢.

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AIR POLLUTION ABATEMENT MANUAL—Chapter 1: Introduction. Chapter III: Community Relations. Manufacturing Chemists' Association, Inc., 246 Woodward Building, Washington 5, D. C. 25¢ each chapter.

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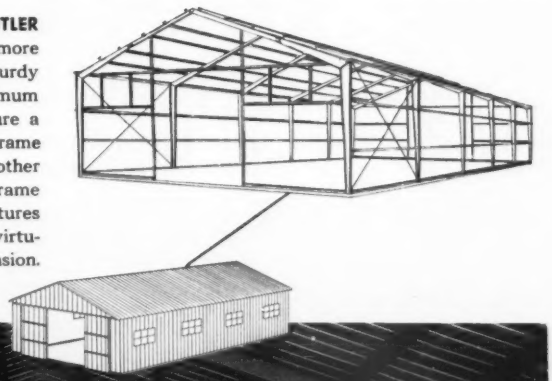

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OBITUARIES

Lewis E. Akers, 61, a month ago made assistant chief engineer of the Virginia Department of Highways, died at Richmond April 9. He had been with the department since 1922. After overseas service in the first world war, he returned to the University of Virginia, where he was graduated as a civil engineer in 1921. He had an important part in the development of the secondary road system of Virginia.

Willard C. Winkley, 67, for 43 years a civil engineer with Lockwood Greene, Engineers, Inc., died at Brookline, Mass., recently. After graduation from Thayer School, Dartmouth College, in 1909, he went at once with Lockwood Greene. He became engineer-in-charge of the reinforced concrete department in the Chicago office. Later he was supervising engineer at Boston. He supervised the construction of many large buildings and was an authority on property appraisals.

Albert H. Richardson, 67, former Beverly, Mass., public works official, died April 11, in Beverly. He was city engineer for 21 years, and retired in 1949 after serving 10 years as public works commissioner.

George L. Sitton, 63, formerly chief engineer and later, on account health impairment, assistant to the chief engineer, of the Southern Railway System, died April 2 in Washington, D. C. For 21 years before going to Washington, he was chief engineer of maintenance of way and structures for the eastern lines, at Charlotte, N. C. He was graduated in civil engineering from the University of Tennessee in 1907. He was elected president of the American Railway Engineering Association in 1950.

William Stuart Fallis, 83, former North Carolina highway official, died April 8. He retired in the 1930's after having served as acting state highway commissioner in North Carolina for six years. He was a pioneer builder of sand clay roads, now in wide use in the South.

Frank H. Steinfeldt, 76, contractor, of Rochester, N. Y., died April 5. He was in the contracting business for many years in the Rochester area.

Webster Mills Smith, 74, retired contractor who built many of the buildings in South Columbus, Ohio, died April 9.

(Continued on next page)

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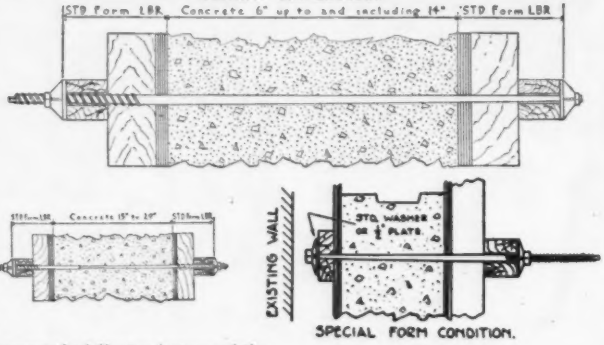

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				Up to 14" Concrete	15" to 29" Concrete	30" to 46" Concrete
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5 Piece She-Bolt Assembly	Approx. 10¢ per set		Approx. 10¢ per set	2" to 9" Tie Rods	10" to 24" Tie Rods	25" to 41" Tie Rods

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P-3958, Engineering News-Record
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Obituary . . .

Forrest Nagler, 66, who retired March 1 as manager and chief engineer of Allis-Chalmers atomic power section, died April 1 at Lake Forest, Ill. A graduate of the University of Michigan he specialized in hydraulic and marine engineering. He was the inventor of a type of axial-flow high-speed hydraulic turbine runner which is widely used.

Thomas Lenoir Gwyn, 71, died April 8. He was one of the pioneers in the development of road programs in North Carolina, and had been chairman of the N. C. Good Roads Association.

John Jacob Davis, 54, Leaksville, N. C., civil engineer, died April 10. A graduate of the North Carolina State College school of engineering, he served six years with the Corps of Engineers during World War II, attaining the rank of lieutenant colonel, and after his discharge was employed by the Bethlehem Steel Company in Venezuela.

Frank M. Offutt, 64, Williamson, W. Va., former city engineer and superintendent of the water department, died April 7. Latterly he was sales representative for the Acme Compressor Co.

Harold R. Sargent, 67, for 35 years an hydraulic and structural engineer for the Western Massachusetts Electric Co., died recently at Turners Falls, Mass. He was a graduate of the University of Maine and had been active in various hydro-electric developments.

Edwin M. Brady, 60, road designer for the Michigan State Highway Department, was killed April 5 at Three Rivers, Mich., when his car left the road and crashed into a tree.

Alexander S. Waller, retired construction executive, died at Greenville, Miss., April 5. He supervised construction of Camp Shelby, Hattiesburg, Miss., and Camp Croft, Spartanburg, South Carolina in the first war.

Thomas C. Bradley, 67, retired civil engineer of the New York Central Railroad, died in Buffalo, N. Y., April 1. He had been with the railroad 42 years, retiring a year ago.

Lloyd M. Applegate, 68, Youngstown, Ohio, died April 6. He was a civil engineer for the Pennsylvania Railroad in St. Louis for several years and in 1913 joined the U.S. Steel

Co. in Youngstown as field engineer in charge of construction of the McDonald mill. He was retired.

Henry D. Fallon, 62, Augusta, Me., died recently. He was graduated from Renssalaer Polytechnic Institute in 1912. Prior to World War I he was employed successively by the Aluminum Company of America, the Pennsylvania Railroad and the Massachusetts Highway Commission. He served in World War I with the Corps of Engineers at Aberdeen Proving Grounds. In 1920 he began his career with the U. S. Bureau of Public Roads and was assigned to Maine as the agency's only representative until 1928. With the increase in road construction activities he continued as district engineer in Maine with expanded personnel, admininstering some $4 million of Maine federal aid money annually.

Col. Charles Robert Forbes, 74, construction engineer, died April 10 in Washington, D. C. He was a consulting engineer for several companies and went to Honolulu as a construction engineer in 1912 and two years later was made territorial superintendent of public works. He was in Honolulu when America entered World War I and he joined the Signal Corps in June, 1917, serving several years in France.

Clifford P. Bowie, 72, Bay Area engineer, who played a leading part in rebuilding San Francisco's streets after the earthquake and fire of 1906, died April 2 in Berkeley, Calif. He began as assistant engineer for Hayward, Calif., joined San Francisco's engineering department in 1906 and later was city engineer at Chico, Calif. In 1946 he resigned as supervising engineer for the San Francisco Petroleum and Natural Gas division of the U. S. Bureau of Mines.

Nicholas L. Bican, 46, chief engineer in charge of airfield installations at the Mather Air Force Base near Sacramento, Calif., died April 4. A graduate of the University of California, he had been stationed on the Mather engineering staff since 1943.

Benjamin Baeder, 64, building contractor of Erie, Pa., died April 8.

Rifat Tirana, 44, who died April 14 in Madrid, was an economist for the Export-Import Bank and the Mutual Security Administration. He had just arrived in Madrid to take charge of the further allocation of credits to Spain and was serving in the capacity of Deputy Chief of the Mutual Security Administration mission there.

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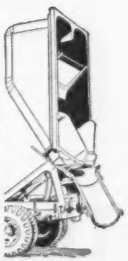

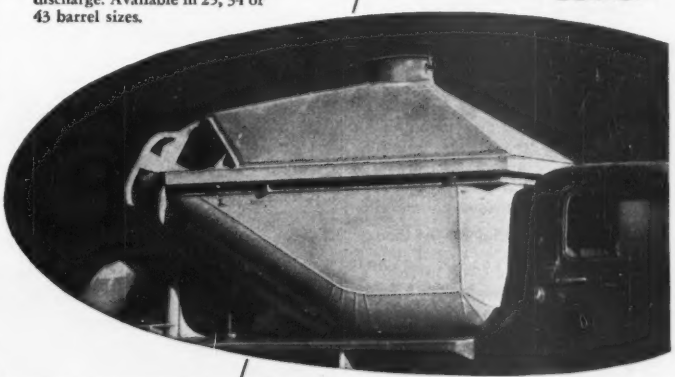

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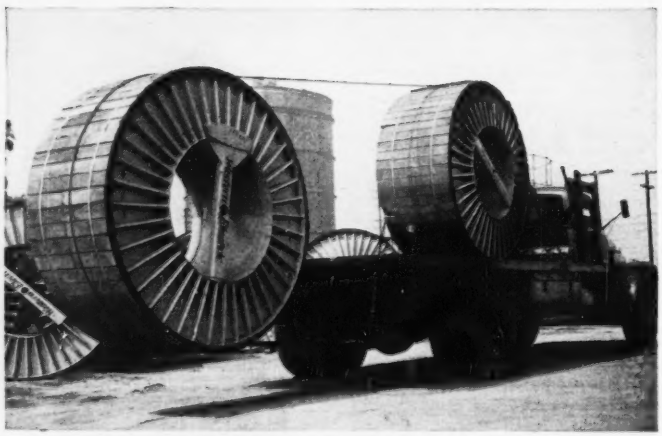
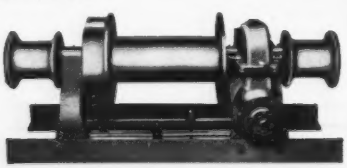


Tulsa Winch-equipped truck used by a public utility company shown loading 3-ton cable reels with a Model 23 Tulsa Winch.



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A Midwestern nationally known company has an excellent opportunity for an experienced Project Engineer with an engineering education and several years of Petroleum Engineering background. Fluid Catalytic Cracking Plant experience desirable.

This man must be capable of handling a complete job, customer contracts, supervision of layouts and design, selection of equipment and supervising other personnel assigned to a Project.

In applying furnish a complete detailed resume of your experience, background, education, availability and a recent snapshot or photograph.

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CIVIL ENGINEER wanted for Municipal Engineering. Highway construction experience desired. Salary range $3950 to $4600. Contact Mr. F. J. Euclide, Engineer Superintendent, City Hall, Green Bay, Wis., for formal application blanks and interview.

ESTIMATOR—PERMANENT Position with long established contractor in Western New York. Must be experienced in Industrial Construction, Commercial and General Construction. Quantity Takeoff, Pricing and Supervision. Submit full resume, stating education, experience, age, availability and salary expected. P-3848, Engineering News-Record.

SEVERAL ENGINEERS in office of consultant on sanitary projects, experienced in this or related fields such as structural or hydraulic. Permanent positions intended. Full information, references and salary requirement requested. Location, Ohio. P-3784, Engineering News-Record.

(Continued on page 119)

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Detailers, checkers and Squad Bosses for Structural Steel or Reinforcing Steel
Experienced in making shop details for fabrication company. Excellent opportunity for qualified men. State qualifications, reference and salary desired.
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Additional Employment Advertising on page 118 & 119

STANDARD OIL COMPANY *(Indiana)*

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Mechanical, civil, and chemical engineers are needed for design, construction, and inspection work at oil refineries in the Chicago, St. Louis, and Kansas City areas.

Expansion of refining facilities creates an immediate need for trained technical men. Opportunities are open to qualified recent graduates and experienced engineers in one of the leading companies in an industry that is noted for its engineering achievements.

Positions are permanent and well-paying, with excellent opportunities for advancement. Outstanding employee benefit plans are provided.

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Reply by letter, giving detailed information on education, experience, and salary expected. All applications will be carefully considered and kept strictly confidential.

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P-3896 Engineering News-Record
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Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and *will be promptly acknowledged.*

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P-3928, Engineering News-Record
68 Post Street, San Francisco 4, Calif.

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P-2807, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Salary open depending upon the experience and qualifications of man selected. City Administrator experience preferred. Contact City Clerk, City Hall, San Carlos, California, for application and qualifications. Closing date for receipt of applications closes May 31st.

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Designing Engineers for Structural Steel or Reinforcing Steel

Experienced in design for architects and fabrication company. Excellent opportunity for qualified men. State qualifications, availability, reference and salary desired.

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Large Virginia manufacturer wants Superintendent of Utilities with engineering degree and experience, to supervise operations of water, electric and steam systems. Send biographical data, including address and phone number, to

P-3991, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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POSITIONS VACANT

(Continued from page 117)

STRUCTURAL ENGINEER to handle take-off, estimating, preparation of layout drawings and design one story buildings. Specializing in open web steel joist, longspan joist and steel truss construction. Excellent opportunity for man with initiative. State education, experience and qualifications. New York City. P-3921, Engineering News-Record.

SUPERINTENDENT OF Public Works; take charge of street maintenance and repairs, sewer maintenance, drainage equipment control and general municipal public works administration, town of 10,000 population; New Jersey; state experience and salary required. Position now open. P-3949, Engineering News-Record.

WANTED—COMPETENT Superintendent, Experienced to supervise hospital or school construction. Age 32-50. State qualifications. P-3876, Engineering News-Record.

WANTED — CONTRACTOR'S Engineer: Assistant to Contractor Operating in New York City and Suburbs; With at least Ten Years experience in Field and Office as Superintendent and Estimator in Heavy Construction Field, including Excavation, Foundations, Bridges, Highways, etc.; Familiar with equipment; Be Competent to handle Men and Organize work, State Education, Experience, and Particulars in Full detail; Salary desired. P-3913, Engineering News-Record.

WANTED QUALIFIED Building Construction Estimator preferably a college graduate in architectural or civil engineering. A permanent position for the right man. Please give experience, references and salary desired. Location: Texas. P-3907, Engineering News-Record.

HELP WANTED. Shop Supt. Man completely familiar with repairs and operation of heavy duty Diesel powered earth moving equipment, power shovels and motor graders; installation of dump bodies and other lines of contractors equipment. Must have had satisfactory experience in handling groups of mechanics. Location Central N. Y. State. Replies should indicate references, expected salary, availability and past experience. All replies held in strict confidence. P-3987, Engineering News-Record.

WANTED, ENGINEERS, experienced waterworks, sewers, sewage treatment, water treatment, design or supervision of construction, also engineers experienced in survey work. State qualifications, experience, give references and salary desired, when can report. P-4007, Engineering News-Record.

WANTED EXPERT Mechanic for work in Ecuador maintaining road-building equipment. Must know diesel and gasoline engines. One year contract renewable. $700 per month. International Road Federation, 550 Washington Building, Washington 5, D. C.

GENERAL SUPERINTENDENT — Marine and Heavy Construction. Permanent position. Location Southern New England. P-3974, Engineering News-Record.

QUALIFIED & Responsible Estimator for a progressive contracting firm, specializing in Building Construction in Tucson, Arizona and Southwest U. S. A. State age, education, experience and salary desired. Murry J. Shiff Constr. Co., P. O. Box 1190, Tucson, Arizona.

PERMANENT POSITIONS open to engineers experienced in highway and bridge design and layout. Excellent opportunities for Specification Writers, Chief Draftsman and Squad Leaders. Phone or write for interview—Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York 5, N. Y.

SELLING OPPORTUNITIES OFFERED

MANUFACTURER OF Chain Link Fences desires additional Sales Outlets from Eastern Seaboard, West to Mississippi River. Write qualifications and other companies you represent. RW-3839, Engineering News-Record.

SELLING OPPORTUNITIES OFFERED

SALES ENGINEERS. Old established manufacturer of heavy machinery has opening for two or more sales engineers, either recent engineering graduates as trainees, or men aged not over 35 who have had experience in sales or operation of excavating machinery, road building machinery or similar. Must be willing to travel extensively in U. S. A. and abroad. Knowledge of foreign language desirable but not necessary. Write SW-3982, Engineering News-Record.

POSITIONS WANTED

CIVIL ENGINEER graduate, advanced degree, licensed, 7 years experience hydraulics and related work, desires position eastern area. PW-3956, Engineering News-Record.

EXECUTIVE CONSTRUCTION Engineer, long experience, estimates and supervision heavy construction including foundations, dams, docks, tunnels, especially difficult subaqueous structures. PW-3497, Engineering News-Record.

SUPERINTENDENT OR Assistant to Project Manager, 21 years construction experience. Heavy excavation, concrete, heavy foundation, sewer and drainage work. All types highway & airport work. Concrete and bituminous paving. Know men, methods, equipment and cost. Available May 1st. PW-3810, Engineering News-Record.

WELDING SUPERVISOR—age 40, background, piping, piers, bridges, docks, subways, and tank farms desires Foreign work. PW-3781, Engineering News-Record.

CIVIL ENGINEER: Contractor-Engineer representative or supervising engineer. Registered P.E. N.Y. Broad field and office experience. General construction, airports, highways, municipal and major defense projects. Reports. Twenty years on responsible assignments covering Latin America, West Indies, Pacific and Far East Area. Fluent Spanish. Prefer south or foreign. Responsible and active. Age 64. Personal interview suggested. Presently located N. Y. City. PW-3889, Engineering News-Record.

CIVIL ENGINEER Graduate in Structural Design, twenty-eight, single, junior member of ASCE, four years sub-professional experience in Soils Mechanics, three years professional experience in Stress Analysis, including a thorough knowledge of the use of A.E.H. Love's Stress, Strain, and Deflection Formulae, Newmark's Charts, etc. Presently employed, but desires job with more challenge and future. PW-3945, Engineering News-Record.

EXECUTIVE ENGINEER, management, supervision, heavy construction, estimates, reports, foundations, dams, tunnels, harbor work, difficult subaqueous structures, experience 40 years. PW-3497, Engineering News-Record.

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SUPT.—GEN. Supt. 30 years extensive experience, heavy excavations, sewers, water, mass concrete construction, bridges, highways, airports, flood control. Seeks connection with progressive well established firm. Highest references. Salary required $1200 per month. PW-3806, Engineering News-Record.

ASST. PURCHASING Agent Big Name Construction Co. NYC Desires New Connection. NYC or Suburban Jersey. Graduate M.E., 7 yrs. Construction Purchasing Experience. Age 38, Veteran. PW-3988, Engineering News-Record.

CONTRACTOR'S ENGINEER, civil engineering graduate, experienced in engineering, estimating and purchasing, desires position with West Coast contractor. PW-4000, Engineering News-Record.

GEN'L PROJECT Superintendent: Operations Manager; Directing all phases of Private & Public Construction; Major Industrial & Defense Plants; Buildings, Intricate Foundations, Hydro-Electric, Dams, Airports, Highway, R.R. Grade Separations; And related facilities. Practical experienced; Know-How; Purchasing & Sub-Contracts; References. PW-3981, Engineering News-Record.

PROJECT ENGINEER, Experienced in management of Design of substantial programs; Structural, Hydraulic, Airport, Sanitary, and Industrial. Age 47, M.I.T. Degree in Civil Engineering. Registered Professional Engineer. Available for challenging project. PW-3972, Engineering News-Record.

WORK WANTED

Jobs Wanted Any Place.
We have the equipment & experienced Divers for any Job Under-Water. Contract or day rates. Brown, 353 Williford, Memphis, Tenn.

Sealed proposals for purchase of following 3 barges for sale by Panama Canal Company will be received by General Purchasing Officer, Panama Canal Co., Washington 25, D. C. until 10:30 A.M., June 3, 1952:

2—Steel dump barges, mud, 1000 cubic yards, and 1600 cubic yards capacity.
1—Steel oil barge 1920 barrels capacity.

Blanks and information relative to this invitation may be obtained from the above office.

GENERAL CONTRACTOR

Having done a gross in excess of 9 million in 8 years. Due to press of other business is desirous of selling all or major part of General Contracting business dealing entirely with Oil, Utilities, and other Private industry in a territory of The Gold Coast of Texas. Equipment of standard make and in good condition. Address—

P. O. Box 2350 **CONTRACTOR** Telephone 2-3212
Corpus Christi, Texas Nite 5-8983

Auction and Wanted Advertising—page 124

An Invitation ...

To Use the World's Largest Equipment Rebuilding Facilities

Where rebuilding is a business—with over 25 years of experience on all types of construction equipment—where highly trained mechanics with precision tools—can build back into your equipment many years of additional and efficient usefulness.

Naturally, the thoroughness employed in rebuilding our own equipment would be used on yours.

You are invited to investigate our complete facilities.

L. B. SMITH INC.

CAMP HILL, SUBURB OF HARRISBURG, PA.

BRANCH OFFICES: PHILADELPHIA, PA. • SYRACUSE, N.Y.

L. B. SMITH INC.

New and Used Equipment News

Prepared Monthly by Ed Woolford at Camp Hill, Pa.

VOL. 1 NO. 1

AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 365 cu. ft. Diesel Rebuilt.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

4024 Cedarapids roll, rebuilt.
Cedarapids Rock-It plant with 2025 jaw, 3033 mill. New.
Cedarapids 1236 Model 6C plant, new.
3033 Cedarapids Hammermill, rebuilt.
1030 Good Roads. Reconditioned.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
42" x 10' apron feeder, rebuilt.
4' x 8' Kennedy Van Saun single deck.
3' x 8' Kennedy Van Saun triple deck.
3' x 10' Symons double deck.
3' x 12' Simplicity 3 deck, rebuilt.
2—15 cu. yd. Cedarapids sand drags, new.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
100-ton, 2-compartment, 13'x23' storage bin with clamshell gates.
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2½-ton GMC, rebuilt.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current gasoline and diesel powered.

SHOVELS—CRANES

Lorain L-50, 1-yd. diesel. New condition.
Brownhoist 1-yd. gas shovel & crane.
Lorain TL-20 diesel powered ½ yd. shovel & hoe.
Link-Belt LS50 gas ½-yd. shovel & hoe.
P&H Model 150, ½-yd. crane.

SHOVEL & CRANE ATTACHMENTS

Lorain TL-20 shovel attachment.
Lorain L-41 Chain Crowd Shovel Attachment. New Condition.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 80-820 fairleads.

Backhoe Buckets & Attachments

Lorain TL-25 hoe attachment, new.
Lorain 30 hoe attachment complete.
¾-yd. Lorain, 40, LBS #6105, 44" cutting width.
26" outside width solid bottom type LBS #4377, good condition.
¾-yd. Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd. crane.
McCaffrey Model 636 for ¾-yd. to 1-yd. crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd. Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd. gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd. extended lip, 1¾-yd. LBS #2260.
Pettibone-Mulliken 2-yd. Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd. for 3500 Manitowoc LBS #5763.
Esco 2½-yd. cast weld dipper with bail & teeth.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Equipment

Jaeger type "L" double screed finisher, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric finisher, 10½'-12½', rebuilt.
2 Koehring 10'-12' finishers, rebuilt.
1220'—Heltzel 9"x8" road forms with stakes.
R.B. Fine Grader for 21' width, rebuilt.
Cleveland formgrader, new 1944, rebuilt.
Corr formgrader, new 1944, rebuilt.

TRACTORS

1—Ford Dearborn rubber tired with hyd. front end loader and hoe attachment.
1—Terratrac with front end shovel loader.
1—Terratrac with angledozer blade.

WELL DRILLS & TOOLS

Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

PUMPS

New Layne Bowler type 18 deep well pump with right angle gear drive. 3000 GPM at 120' TDH.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

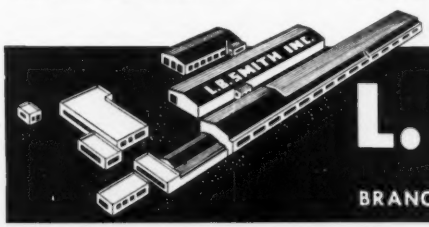
GRADERS

Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

GASOLINE AND DIESEL ENGINES

Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels, ME-4 & 46.
GM 6 and 12 cylinder diesels, practically new.

Phone **HARRISBURG, PA. 7-3431**



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CAMP HILL, SUBURB OF HARRISBURG
BRANCH OFFICES: PHILADELPHIA, PA. • SYRACUSE, N.Y.

DIESEL POWER

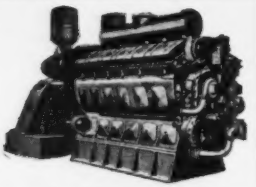
FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Mode	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	480
1420	Fairbanks Morse	38D8¼	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12¼x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.

DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

CLASSIFIERS: 6—Akins and Wemco 54" and 78", single screw, double pitch, weir type, 220/440 volt motors, all in new condition. Three of the above located near Reno, Nevada. 2—Dorr 8' x 39' rake, one with 16' and one with 22' bowl. New condition.

DRYERS or KILNS: 2—10 ft. x 90 ft., heavy duty, with or without auxiliary equipment, condition like NEW. One located in Minnesota.

PULVERIZERS: Hardinge Mill size 5 ft. x 22", steel lined, complete with disc feeder and 30 H.P. motor. 1—10 ft. x 36" Hardinge Conical Ball Mill with 300 H.P. motor and all auxiliary equipment for dry grinding. 1—5' x 36", silica lined. 1—Sturtevant 1-½ Ring Roll Mill. 1—3' x 4' Elmco Ball Mill complete with liners, ball charge, V-belt drive and 20 H.P. motor and control. NEW condition.

COMPRESSORS: Worthington DC2, 29/18-½ x 21, 600 H.P. synchronous motor, 440 volt, with all auxiliary equipment. 4—Ingersoll Rand diesel portable, 500 cu. ft. @ 100 lbs. pressure. NEW 1951.

DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley and spare parts.

MINE HOISTS: 150 H.P., 6'6" dia., 6'8" face; 250 H.P., 72" dia., 48" face; 200 H.P., double drums, one clutched, 8 ft. dia., 4 ft. face. All 3 phase, 60 cycle, 2200 volt, with control equipment. Head Frame for double shaft 16'9" x 17'2", height 55 ft., with or without 8 ft. dia. sheaves for 1-½" rope. Other Hoists 100 H.P. to 1050 H.P., single and double drum with electrical equipment.

ELECTRIC MOTORS: 2—NEW 1000 H.P., 188 RPM, 2300 volt, drip proof, with automatic switch gear, UNUSED. 1—950 H.P. Hoist Motor, 3 phase, 60 cycle, 2200 volt, 443 RPM, with all control equipment.

A. J. O'NEILL

Lansdowne, Pa.

Phila. Phones: Madison 3-8300—3-8301

- COMPRESSORS -

PORTABLE — STATIONARY

NEW & REBUILT

Gas - Diesel - Electric - Steam

RENT - SELL - BUY

"OUR 50TH YEAR"

—SCHRAMM—

—THREE AVAILABLE—

596 CFM - 100# - 100 HP.
Model 420 Base Mounted with 100 HP-G.E. Tri/Clad 3/60/220/440. Built-in Motors. Complete with self contained cooling system.

NO FOUNDATION REQUIRED - LIKE NEW -

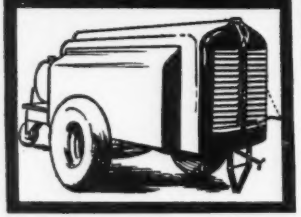
- IMMEDIATE SHIPMENT -

YOU CAN PAY MORE BUT YOU CAN'T BUY BETTER

American Air Compressor Corp.

Dell Ave. & 48th St., North Bergen, N. J.

SINCE 1902



SHOVELS—CRANES—DRAGLINES
Buc-Erie 51-B 2 yd. Diesel Shovel 1949.
Manitowoc 1¾ yd Shovel-Drag. New Shovel front.
P&H 855-B 1½ yd Shovel-Crane-Drag. Diesel.
Northwest Model 80-D 2½ yd Diesel shovel.
Lorain 820 1¾ yd. Shovel-Crane, Diesel, 1947.
Lorain Motocrane MC4 15-18 tons capacity.
Koehring 605 1½ yd. Diesel Shovel.
Lima 1201 std. Diesel Shovel, 3½ yds.
Lima Paymaster 1 yd. Diesel Shovel.
Link-Belt K-520, Diesel Shovel, 3 yds.
Link-Belt K-595 Dragline, 2½ yds. Diesel.

TRUCK CRANES
Lorain Moto-Crane MC4- 15 to 18 tons. Rebuilt.
Koehring 304 20 tons cap. 80' bm. Excellent.
Michigan Model TLDT 12 tons 50' boom.
General 307, 12 tons. Self propelled 60' Bm.
P&H 255-A 20 tons 80' bm. Mack chassis.

CONCRETE PLANTS—BINS & SILOS
B-K 100 ton agg. bin 400 bbl. cement. Complete.
Butler 250 bbl. cement bin elev. screw conveyor.
Johnson 4 compt. 300 ton agg. 590 bbl. cement.
Butler 310 bbl. cement bin 1 yd batcher. Elec.
Cement bin 400 bbls. with batcher. NEW.
Agg. bin 100 tons 3 cpts. 2 yd weighbatcher. New.
Heltzel 3 compt. agg. bin 85 tons w/weighbatcher.

ASPHALT PLANTS
Cedar-Rapids Model FA Port. Excellent.
Cummer 1500 lbs. Semi-Port. Very good.
Std. 1500 lbs. Batch. Sta. Bit.
Simplicity Model S-100. Diesel powered.
Madsen 4000 lbs. Used but little. Excellent.
B-G Model 840-830 Maintenance Plant. Complete.
Hetherington-Berner Heavy Duty Moto-Paver.
Cedar Rapids Travel Mix Plant 100-150 tons.

STIFF LEG AND GUY DERRICKS
Steel 35' stiff leg derrick 100' boom.
American 20 ton stiff leg derrick 90' boom.
Stiff leg derrick 15 ton 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.

CONCRETE MIXERS AND PAVERS
Jaeger BP-5 Asphalt Paver & attachments.
2 Ransome 34-E Dual Drum Pavers Diesel.
Rex 28-S Builders Mixer, Elec. New 1947.
Koehring 1 yd tilting mixer complete electric.

ROAD FORMS
Blaw-Knox and Heltzel 8100 ft. 9"x9"; 10,000 ft. 8"x8" and 3000 ft 10"x8".

RICHARD P. WALSH CO.

30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.

2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

STEEL FOR SALE

5" I x 40'—	8 H x 31	40'/48'
6" I x 40'—	10 H x 42	40'/48'
8" I x 40'—	10 H x 49	40'/48'
12" I x 40'—	10 H x 54	40'/48'
8" C 11.5 x 40'—	10 H x 57	40'/48'
12" C 25 x 40'—	12 H x 53	40'/48'
15" C 33.9 x 40'—	12 H x 65	40'/48'
6 H 20 x 40'—	12 H x 74	40'/48'

Also Large Stock New & Used Wide Flange & Std. Beams, Angles, Reinforcing Bars

FRITZ STEEL CORP.

540 Barry St. Bronx, N. Y.
Dayton 9-1742

FOR SALE

3 yd Lima 1201 Dragline 120' bm. 1947
40 ton Orton Diesel Locomotive Crane
30 ton Ind. Brownhoist Gas Loco. Crane
Clyde 45 ton Elec. Gantry Crane new 1949
Manitowoc 2000 Crane 1½ yd 80 ft. bm.
65 ton Whitcomb Diesel Elec. Locomotive
8¼x10 Clyde 3 Drum Steam Hoist
Rex 200 Single Pumpcrete. Gas powered
Northwest 80D 2½ yd. Diesel Combination

MISSISSIPPI VALLEY EQUIPMENT CO.

509 Locust St. St. Louis 1, Mo.

SALE OR RENT

1—10-Ton Link Belt YC-9 Cargo Crane
1—10-Ton Browning 15-C Truck Crane
1—25-Ton Link Belt HC-90 Truck Crane 120' Boom
1—MC414 Lorain Truck Crane
1—20-Ton Bay City Truck Crane
1—35-Ton Davenport Diesel Electric Loco.
2—45-Ton GE Diesel Elec. Locos.
1—70-Ton GE Diesel Electric Loco.
1—80-Ton Lima 6-wheel Switcher
1—6-Ton Huber 3W Roller gasoline
1—10-Ton Stiff Leg Derrick
1—40-Ton Orton Diesel Loco. Crane
1—40-Ton Industrial Brownhoist Oil Fired Loco. Crane. New 1943

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Girard Trust Co. Bldg. Phila. 2, Pa.
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Buckets	Tournapulls	Pipe
Locomotives	Trenchers	Pavers
Dumpters	Euclids Wagons	Backhoes
Gravel Plants	Dredges	Scrappers
Hammers	Boilers	Tanks
Hoists	Railroad cars	Tractors
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Shovel Fronts	Generators	Deck Scows
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STONE THE CRANE MAN

1132 Prudential Bldg Buffalo 2, N. Y.

MIXERMOBILE

2 Cubic Yard Capacity

Used only on one job

EXCELLENT CONDITION

HODGE & HAMMOND, INC.

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DEPENDABLE USED EQUIPMENT Backed By McCOY CO.

Largest inventory in Rocky Mountain Empire. Rebuilt in one of the West's most modern and complete equipment and repair shops.

All Items Below Ceiling Price

1—LeTourneau Model F Scraper in excellent condition

4—Caterpillar No. 12 Motor Graders. 9K series. All rebuilt and guaranteed

1—Bay City combination dragline and backhoe. ½ cu. yd. capacity. Good working condition

1—Caterpillar D8 Diesel Tractor. Equipped with hydraulic 6S dozer. 5R series. Completely rebuilt

"Cat" RD 7 Diesel Tractor with Isaacson 8 yd. Scraper

"Cat. D7 Diesel Tractor with LeTourneau CCU and 7S Dozer. Rebuilt and guaranteed.

"Cat" D8 Diesel Tractor, rebuilt and guaranteed, with new Trackson side boom

"Cat" DW10 Tractor and W10 Wagon

3—Gallon No. 101 Motor Graders, tandem drive. Good snow-removal equipment

2—"Cat" Diesel DW20 Tractors and W20 Wagons. These units used as demonstrators and have worked less than 500 hours. Priced under ceiling price. Here's an opportunity for a real buy.

Bay City 52 Dragline and Crane with "Cat" 8800 Engine. Rebuilt and guaranteed.

"Cat" D13000 Diesel Engine with heat exchanger.

2—D13000 Self-regulated Electric Sets equipped with $1500.00 worth of extra equipment. Rebuilt and guaranteed.

Smith Truck Mixer, 5½ cu. yd. Rebuilt and guaranteed.

Subject to Prior Disposal
Prices F.O.B. our Shop, Denver

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Phone AComa 3751

THE KEY TO LOWER CONSTRUCTION COSTS!

Key Your Equipment to the Job!

Don't waste a big compressor on a small job! E.C.A. has the RIGHT SIZE equipment for every construction job! Three plants—48 years' experience at your service!

THIS MONTH'S SPECIAL
75 KW DIESEL GENERATOR
1—75 KW (93.5 KVA) Diesel Generator, 220/440/60/3, powered by Cat. D-13000 Diesel engine, complete with electric starting and control panels. LATE MODEL. BARGAIN.

AIR COMPRESSORS
Portable, 2-stage
3—500 cu. ft. Ing. Rand, 2 powered by Wauk.-Hesselman Diesel engines, one on pneu. tires and one on steel wheels. 1 powered by Waukesha gas engine on steel wheels.
12—Sullivan, LeRoi, Chicago Pneumatic, Ing. Rand, Schramm, Gardner Denver, 105 and 160 cu. ft., gas powered.
WE HAVE A LARGE SELECTION OF COMPRESSORS, ALL SIZES.

BIN
1—100 ton Blaw-Knox Model P-3100, 3-compt. batching bin. With 1½ yd. #63B weigh batcher. For rental only.

CRANES, CRAWLER
1—1½ yd. P&H 655-A Diesel Crane or Dragline. Ser. 6426. With 75' boom, 20' jib. Power Cat. D-13000 Diesel eng. Hi gantry. Wt. 82,900#. Rental only.
1—Mdl. 501 Koehring #1071, 60', 70', 80' boom, 18' jib, Mdl. K. Wisc. gas eng. Cap. 40,000# @ 12'. Shpg. wt. 97,200#.
1—Bucyrus Erie Mdl. 33B 1¼ yd. Crane, Ser. 16502, powered by 8 cyl. V8 LeRoi gas eng. 50' boom, fairleads and vertical tagline.

CRANES, LOCOMOTIVE
1—25 ton Industrial Brownhoist Type G, 40-50-60' boom, Nat'l. Board Boiler, 150#.

DERRICKS
2—American Terry steel erectors, 70' mast, 60' boom, 8 ton @ max., 11 ton @ 20', also have extra center sections.
1—25 ton Model E. Wiley Stiffleg Derrick, cap. 25 ton at 38', 10 ton at 50'. With 60' boom, 12' bullwheel. For hook or clamshell operation. With galvanized sheaves.

HOISTS, GASOLINE
1—100 HP single drum Jaeger, Special Model LCT6, 6 cyl. Hercules gas engine with Twin Disc Torque Converter, cap. from 3,000# @ 350 FPM to 31,000#. Main drum reversible. Ideal for salvage operation or heavy lifting. Wt. 11,500#. New condition.
WE HAVE A LARGE SUPPLY OF HOISTS, ELECTRIC, GAS, AND STEAM POWERED, 1, 2 & 3/DRUM.

LOCOMOTIVE, 15 TON, STD. GA.
1—15 ton Vulcan Std. Ga. gasoline powered locomotive, Ser. 3903, 6 cyl. Mdl. JMS LeRoi gas eng. Wt. 30,000 lb.

PUMPCRETE
1—Mdl. 190 Rex single #CP114, 4 cyl. Wauk. gas eng. with remixing hopper powered by 4 cyl. LeRoi gas eng. Recommended pumping distance 1000' with 7" pipe. Max. vert. lift 110'. Cap. 23 to 30 cu. yds. per hour. $6,500.

PUMPS
WE HAVE A LARGE SUPPLY OF PUMPS, ALL SIZES, FROM 1½" UP TO 10". ELECTRIC OR GAS. CENTRIFUGAL, VERTICAL AND HORIZONTAL. ALSO DIAPHRAGM, SLUDGE, STEAM AND SUMP PUMPS.

TOWERS
1—37' Jaeger Hoister Model SRT, with single drum hoist, 66"x69" platform, cap. 2000#. Wt. 4380#.
1—New PT tower, American, 78', Model III, Type PT. Complete with cage, cathead and bottom sheave. Wt. 3538#.

CONTACT US FOR YOUR TOWER REQUIREMENTS

Partial list only—Please let us quote on your requirements

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LOCOMOTIVE
1—Plymouth 6 Ton Gas—36" Ga.—Like New.
1—Brookville 10T-30" Ga. Diesel—Like New.
2—Whitcomb 15 Ton, 36" Ga.—Diesel.
1—Baldwin-0-4-0-50 Ton Steamer—Fine.
1—Plymouth 20 Ton Diesel—48" & Std. Ga.

LOCOMOTIVE CRANES—STEAM
Industrial—50 T. Type L.
1—Derrick Car—50 Ton.

19—Hopper Cars—15 Ton—36" Ga.
3—Hopper Cars—50 Ton. Excellent.
5—Flat Cars—50 Ton.
2—Conway Mod. 75 Muckers. #256 & 305. Bargains.
1—Mundy D.D. Hoist—300 H.P.—3—60—2200.
Marion 45 Ton—Gantry.
American 30 Ton Stiffleg. New. Mod. 2036.

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100 Tons 8" x 36# Bearing Piles
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100 Tons 12" x 53# Bearing Piles
100 Tons 8" x 31# H-Beams
100 Tons 10" x 49# H-Beams
100 Tons 12" x 65# H-Beams

We can book above sizes in all other weights for shipment from mill.

We can also furnish from stock I-Beams, Channels, Angles, and Plates.

Contact us for all Structural Steel items.

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STILLWELL 4-2720 DIRECT WIRE VIA
STILLWELL 6-5448 WESTERN UNION

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2000—36 In. Troughing 6" Rolls
1400—42 In. Troughing 6" Rolls
100—60 In. Troughing 6" Rolls
600—36 In. Return 5" Rolls
450—42 In. Return 5" Rolls
25—60 In. Return 5" Rolls
All above fitted Ball Bearings

30 COMPLETE NEW TERMINAL SETS WITH LAGGED HEAD PULLEYS

NEW RUBBER CONVEYOR BELTS
8000 Ft. 36 In. 42 In. 60 In.

NEW VIBRATING SCREENS
10 Allis-Chalmers 6' x 14'—2 Deck Ryp-Flow with Car Loads ⅛ in. to 4 in. Square opening extra Screen

NEW MERRICK WEIGHTOMETERS
10 Type E for 36 in. Belt

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4—7 ft. x 30 ft. Type DSFX

CRUSHERS
42 x 48 AC Superior Jaw
48 in. Telsmith Gyrasphere
5½ Symons Short Head Cone
24 x 36 Farrell Jaw

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N. Y.

AT AUCTION
CONTRACTORS MACHINERY

Hunting Park Ave., W. of "G" St., Phila., Pa.

TUESDAY, MAY 6, 1952, AT 11 A. M.

On the Premises

Ransome 34E Dual Drum Paver.
Bay City #30 Crawler Crane.
P. & H. #700 1½-Yd. Crawler Crane.
Insley K12 Crawler Crane, and Back Hoe.
Parsons Model 310 Trencher.
17 Caterpillar, Allis-Chalmers.
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SEARCHLIGHT SECTION

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OFFICIAL PROPOSALS

Bids: May 6, 1952

Route 4, Section 4D, Marginal Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 4, SECTION 4D, MARGINAL ROAD
Construction of Route 4, Section 4D, Marginal Road, Grand Ave., Madison St., and Kinderkamack Road, Borough of River Edge and City of Hackensack, Bergen County. Length 0.825 mile. The principal items of construction are:

Estimated:
- 10,895 cu. yds. Roadway Excavation-Earth
- 4,288 cu. yds. Subbase
- 10,042 sq. yds. 4" Waterbound Macadam Base Course
- 9,939 sq. yds. 3" Waterbound Mac. Inter. Course
- 1,150 tons Bituminous Concrete Pavement Surface
- 3,048 sq. yds. 10" Rein. Conc. Pavement Surface
- 8,353 lin. ft. Concrete Curbs

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, May 6, 1952, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: May 12, 1952

Structural Steel For Building No. 141

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-200.023

Sealed proposals for furnishing and erecting structural steel for Building No. 141 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:00 A.M. Monday May 12, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 24, 1952

OFFICIAL PROPOSALS

Bids: April 30, 1952

New York State Highway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, Albany, N. Y.—Pursuant to the provisions of the Highway Law, the Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on Wednesday, April 30, 1952, by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of work
		DISTRICT No. 1				
		G. L. NICKERSON, 353 Broadway, Albany, N. Y.				
Essex	FASS 50-1 (Comp.)	Proj. S-1047(2) Completion of Tahawus-Schroon River, Pt. 1 (Co. Rd.)	4.44	D. S. T. Graded Gravel	$11,000 Plans $15	$188,000
		DISTRICT No. 2				
		LACY KETCHUM, 109 No. Genesee St., Utica 1, New York				
Fulton	FARC 52-26	Proj. F606(2); F604(3); F419(4) Mayfield Village, SH 5194 Mayfield-Northville Pts. 1 & 2, SH 363-54! Northville-Chapmans Corners, SH 362 Northville Village, North, SH 5095	4.96	9" Cem. Conc. Pavt. 24' Wide = 4.89 mi. Asp. Conc. Ty. 1A, Opt. = 0.07 mi.	$36,000 Plans $15	$645,000
		DISTRICT No. 3				
		WM. ROBINSON, Weigh Lock Bldg., Syracuse 1, New York				
Onondaga	O. T. 52-4 R. C. 52-32 S. T. 52-4	N. Y. State Thruway-The Ontario 9.67 Section-Subdivision 7 (Warners-Liverpool) Cold Spring-Liverpool, SH 670; 2 Marginal Highways; Co. Rd. 64; Co. Rd. 31; Co. Rd. 194; Relocating Onondaga Lake Pkwy.		9" Cem. Conc. Pavt. 26@25' Wide & Var. = 7.10 mi Asp. Conc. Ty. 1-A Opt. = 2.38 mi. Misc. Work = 0.19 mi. Hy. Sep. Alpha I-Beam 4 Sp. 348' Hv. Sep. Alpha I-Beam 4 Sp. 209'-5" Hy. Sep. Alpha I-Beam 4 Sp. 251' RR Sep. Rig. Frame Arch 42'-4" Hy. Sep. Alpha I-Beam 3 Sp. 160'-8" Hy. Sep. Alpha I-Beam 4 Sp. 280'	$270,000 Plans $50	4,803,000
Onondaga	O. T. 52-7 R. C. 52-34 S. T. 52-10	N. Y. State Thwy.-The Ontario 9.12 Section-Subdivision 6 (Jordan-Warners) Jordan Village, No. Main St., SH 1505; Jordan-Cross Lake SH 655; Co. Rd. 58; Co. Rd. 64		8" & 9" Cem. Conc. Pavt. 26'25' Wide & Var. = 8.76 mi. Asp. Conc. Ty. 1-A, Opt. = 0.36 mi. Hy. Sep. 4 Sp. Alpha I-Beam 196'-5⅜" Hy. Sep. 3 Sp Alpha I-Beam 196'-2½" Hy. Sep. 4 Sp. Alpha I-Beam 243' RR Sep Alter. to 104.9' Pl. Gird.	$110,000 Plans $50	$2,091,000
		DISTRICT No. 6				
		H. F. BRUMM, State Office Bldg., Hornell, New York				
Steuben	P. S. C. 9418	Elimination of Grade Crossing of the Erie RR, D. L. & W. RR & N. Y. C. RR with various streets in the City of Corning and the villages of South Corning, Riverside and Painted Post		Buildings & Facilities at the Engine Terminal	$12,000 Plans $50	$208,000
		DISTRICT No. 8				
		J. S. BIXBY, Pleasant Valley Road, Poughkeepsie, New York				
Columbia & Dutchess	F. A. R. C 52-6	Proj. F-350(20) Hillsdale-Copake Iron Works, SH 5347 Copake Iron Works-Copake SH 5645 Copake-Mt. Riga Pts. 1 & 2 SH 8009 Millerton-County Line SH 709	7.83	9" Cem. Conc. Pavt. 24' Wide	$90,000 Plans $25	$1,724,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: May 5, 1952

Air Conditioning Alterations

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT EXD-120.051

Sealed proposals for air conditioning alterations in the Port Authority Building will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:15 A.M. Monday, May 5, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 24, 1952

Bids: May 8, 1952

Wire & Cable Lincoln Tunnel

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 769

Sealed proposals for the supplying of various sizes and types of wire and cable for delivery to the Lincoln Tunnel, Weehawken, N. J. will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M. Thursday, May 8, 1952, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 24, 1952

(Continued on following page)

OFFICIAL PROPOSALS

Bids: May 19, 1952

Connections to Port Authority Bus Terminal

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
INTERIOR FINISHES
NINTH AVENUE STORE
CONTRACT LT-120.025

Sealed proposals for the construction of interior finishes for the Ninth Avenue Store at the connections to the Port Authority Bus Terminal, New York City, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A.M. Monday, May 19, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 24, 1952

Bids: May 6, 1952

High Service Mains

Sealed bids will be received until 10:00 A.M. EST May 6 A.D., 1952, in the City Commission Room, City of Fort Lauderdale, Florida, for Laying 16", 18", 24", and 30" high service mains.

Bidding blanks may be obtained from the office of the Engineer. Plans and specifications are on file in the office of the Engineer.

A deposit of $25.00 for plans and specifications, and of $25.00 each for additional copies of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within ten (10) days of the opening of bids.

A certified check for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the payee as liquidated damages should the bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the proposal, in the event the proposal of the bidder is accepted.

The Owner reserves the right to reject any or all bids.

H. M. Link
City Manager

Bids: May 22, 1952

Intercepting Sewers and Sewage Treatment Plant

Sealed proposals, invited by the City of Ashland, will be received at the office of the City Manager, City Hall, Ashland, Wisconsin, until 1:00 P. M. Central Standard Time, on the 22nd day of May, 1952, at which time they will be publicly opened and read aloud.

The proposed work includes the construction of intercepting sewers, pumping stations, and a sewage treatment plant together with the furnishing and installation of all equipment and services together with all material and appurtenances necessary for a compelte installation.

The work will be let in two contracts:

Contract 1—Intercepting Sewers

The work under Contract 1 comprises the construction of 41 feet of 8-inch, 79 feet of 12-inch, 490 feet of 15-inch, 1,016 feet of 18-inch, 380 feet of 21-inch, 4,568 feet of 24-inch tile or concrete gravity sewer, and 437 feet of 8-inch, 2,243 feet of 12-inch, 345 feet of 14-inch cast iron force mains, and 429 feet of 8-inch and 14-inch inverted siphon, and 570 feet of 14-inch and 24-inch inverted siphon. The work to be done consists of the construction of the sewers and force mains complete with all manholes, risers, house connections, blow-offs, overflow structures, and special structures all as shown, specified, and directed.

Contract 2—Sewage Treatment Plant

The work under Contract 2 includes the construction of the Main Building, Screen and Grit Building, preliminary sedimentation tanks, sludge beds, inside and outside piping and the furnishing and installing of all equipment and appurtenances comprising the sewage treatment plant. Also included in this Contract is the construction of two pumping stations and two ejector stations together with the furnishing and installation of all pumps, piping, equipment, and appurtenances as shown, specified and directed.

Instructions to Bidders, Proposal Forms, Contract, Specifications, Form of Performance Bond and Plans may be obtained from the office of Greeley and Hansen, Engineers, 220 South State Street, Chicago 4, Illinois, or from the office of the City Manager, Ashland, Wisconsin, on deposit of $10.00, which sum so deposited will be returned in full, if said Contract Documents are returned in good condition within 5 days after the opening of bids.

Proposals must be submitted on the forms furnished by the City, must contain the name of every person interested therein, and must be accompanied by a contract and bond with sureties as prescribed by the form furnished, complete with the exception of the signatures on the part of the City, or in lieu thereof may be accompanied by certified check in the amount of not less than five per cent of the bid payable to the City as a guarantee that if the bid is accepted, the bidder will execute and fill in the proposed contract and bond within three days after the award of the contract.

The City of Ashland reserves the right to reject any or all bids and to waive or not waive any informalities in the bids received.

Acceptance or rejection of proposals will be made as soon as practicable after the bids are received, but the City reserves the right to hold bids for 30 days from the date of opening.

Dated this 12th day of April 1952.

CITY OF ASHLAND, WISCONSIN
By Leo J. Martell, City Clerk

Bids: May 9, 1952

Approaches to Bridges

DELAWARE RIVER JOINT TOLL
BRIDGE COMMISSION
526 Broad Street Bank Building
Trenton 8, New Jersey

Sealed proposals for the construction of the western approaches for three bridges over the Delaware River, between Pennsylvania and New Jersey will be received by the Delaware River Joint Toll Bridge Commission at its office, 526 Broad Street Bank Building, Trenton 8, New Jersey, until eleven o'clock (11:00 A.M., E.D.S.T.) on the 9th day of May, 1952, at which time and place all bids will be publicly opened and read aloud.

After April 9, 1952, Instructions to Bidders, form of Proposal, form of Contract, form of Performance Bond, Plans and Specifications may be examined at the office of the Commission, above address, and copies thereof obtained upon payment of $10.00 for each set, which amount is not returnable.

The names, location and approximate quantities of major items for the three approaches are as follows:

PENNSYLVANIA APPROACHES

Contract No. 104—Delaware Water Gap Bridge
- Earthwork ..... 86,000 c.y.
- Pipe Drains (6-in. to 48-in.) .... 3,300 l.f.
- Inlets, Manholes and Valve Pits .. 39 units
- Concrete Curb and Gutters ..... 2,000 l.f.
- Concrete Pavements ..... 8,900 s.y.

Contract No. 204—Portland-Columbia Bridge
- Earthwork ..... 230,000 c.y.
- Pipe Drains (6-in. to 30-in.) ... 20,000 l.f.
- Inlets, Manholes and Valve Pits .. 59 units
- Concrete Pavements ..... 24,000 s.y.
- Concrete Curb and Gutter ..... 7,100 l.f.
- Topsoil, Seeding and Mulching .. 52,000 s.y.

Contract No. 304—Milford-Montague Bridge
- Earthwork ..... 28,000 c.y.
- Pipe Drains (6-in. to 30-in.) .... 2,600 l.f.
- Inlets and Manholes ..... 17 units
- Concrete Pavements ..... 8,300 s.y.
- Concrete Curb and Gutter ..... 1,600 l.f.

Proposals may be submitted for any one approach; for any two approaches, or for all three approaches.

Each Proposal must be accompanied by a certified check in the amount of not less than five (5) per cent of the amount of the Proposal. If the bidder submits Proposals for more than one contract, a single certified check in the amount of not less than (5) per cent of the largest amount of work included in a proposal will be sufficient.

All checks shall be made payable to the Delaware River Joint Toll Bridge Commission, which amounts shall be forfeited as liquidated damages if the bidder or bidders fail, within ten (10) consecutive calendar days after written notice that the bidder or bidders have been awarded the contract, to enter into a written contract, with the Commission in accordance with the accepted bid, and to give a Performance Bond satisfactory to the Commission, equal to one-hundred per cent (100%) of total amount of contract.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work, and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

DELAWARE RIVER JOINT TOLL
BRIDGE COMMISSION
Alexander R. Miller, Chairman

April 9, 1952

Bids: April 29, 1952

East Delaware Tunnel Outlet Works

CONTRACT 417

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on Tuesday, April 29, 1952, for Contract 417, for the construction of the outlet works of the East Delaware tunnel of the Delaware aqueduct, in the Town of Neversink, Sullivan county, New York. The work comprises the construction of about 88 feet of concrete covered and lined steel pipe conduit ten feet six inches in diameter, about 106 feet of concrete covered and lined by-pass pipes 54 inches and 64 inches in diameter, the substructure of a powerhouse, an outlet chamber, a stilling chamber, a discharge channel and appurtenances of all of these structures, including Venturi meters and piping, all as set forth in the specifications.

No bill will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of seventy-five thousand dollars ($75,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders, desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: May 8, 1952

Installation of Oil Fired Heating Boiler for Holland Tunnel

THE PORT OF NEW YORK AUTHORITY
INSTALLATION OF OIL FIRED
HEATING BOILER FOR HOLLAND
TUNNEL
CONTRACT O & M—148
PROPOSAL NO. 768

Sealed proposals for furnishing all labor, materials and equipment required to remove existing coal fired boiler and installing new oil fired boiler with burner and fuel oil tank at the Holland Tunnel New Jersey Land Ventilation Building, Jersey City, N. J., will be received at the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York 11, until 11:00 A.M., Thursday, May 8, 1952, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, April 24, 1952

OFFICIAL PROPOSALS

Bids: May 15, 1952

Sewage Treatment Plant

TOWN OF STRATFORD
CONNECTICUT

Sealed proposals for construction of a Sewage Treatment Plant, Contract XIV, will be received by the Town of Stratford at the office of the Town Manager, Town Hall, Stratford, Connecticut, until 8:00 P.M., Eastern Daylight Saving Time, on May 15, 1952, and then in the Council Chamber publicly opened and read. No bids will be accepted after said hour.

Information for Bidders, Proposal forms, specimen Contract, Plans and Specifications and other pertinent Contract documents may be examined at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York City, New York, and at the office of the Town Manager, Town Hall, Stratford, Connecticut, between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays, and obtained upon making a deposit of Twenty-five ($25.00) dollars, which amount will be refunded to bidders within thirty (30) days after the proposals are opened and upon return of the data undamaged.

Extra copies of specifications may be obtained at the cost of Ten ($10.00) dollars each, extra copies of plans may be obtained at the cost of Fifteen ($15.00) dollars each which sums will not be refunded. Extra sheets may be obtained at the cost of One ($1.00) dollar each which sum will not be refunded.

Cash, or a certified check or bid bond made payable to the order of the Town of Stratford, Connecticut, in the amount of 5% of the bid must be deposited by each bidder with his bid as a guarantee that, in case the contract is awarded to him, he will execute such contract and furnish a satisfactory Performance and Labor and Material Bond in the full amount of the bid, satisfactory to the Town Council as to form and sureties. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

The Town of Stratford reserves the right to reject any or all bids, to waive any informalities or to accept the bid which in its judgment will be for the best interests of the Town of Stratford.

TOWN OF STRATFORD,
CONNECTICUT
By: Harry B. Flood
Town Manager

March 20, 1952
BOWE, ALBERTSON & ASSOCIATES
Engineers

PROCUREMENT DEPARTMENT, CITY OF PHILADELPHIA. Sealed proposals will be received at Room 1005, City Hall Annex, until 1.30 P.M., Eastern Daylight Saving Time, Thursday, May 15, 1952, and opened at that time in Room 313, City Hall Annex, Philadelphia, Penna., for BYBERRY CREEK COLLECTING SEWER IN GRANT AVENUE AND PRIVATE PROPERTY FROM NORTHWEST OF HEGEMAN STREET TO SOUTHEAST OF FORDHAM ROAD—CONTRACT NO. SD 180 NE—Principal item of work, 4,232 feet of 4'0" diameter concrete sewer in rock tunnel. Proposal forms and specifications may be obtained in Room 1101 City Hall Annex. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Co., 51 North 13th Street, Philadelphia 7, Penna. No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1103 City Hall Annex, Philadelphia 7, Pa., at least one (1) week prior to the date of opening bids. Each bid must be accompanied by security in form and amount as set forth in the proposal form.

CHARLES H. FRAZIER,
Procurement Commissioner.

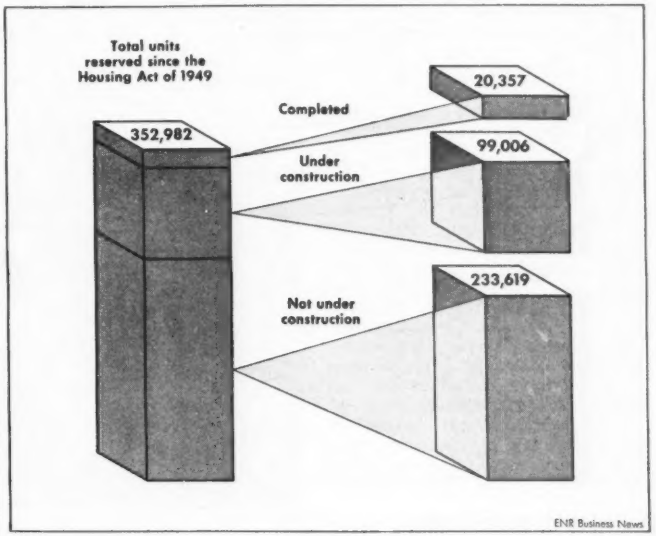
OFFICIAL PROPOSAL

RATE: The rate for Official Proposal Advertising is $1.50 per line (or fraction) per insertion.

COPY RECEIVED: up to 10:30 A.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Progress of PHA public housing program through March '52



ENR housing awards 46% over '51; public projects lead comeback

ENGINEERING NEWS-RECORD contract awards for the first 16 weeks of 1952 show mass housing is running 46% ahead of 1951, with a total of $1,139 million.

Private housing accounts for $826 million, 38% more than in 1951, and public housing, with $312 million is 71% ahead of last year.

Compared to the peak year of 1950, private housing in 1952 is running 24% behind the $1,087 million reported for the first 16 weeks of 1950. But public housing is 391% above the $64 million reported for the same period.

• **Leading states**—Five states had 42% of the total housing volume in the first quarter of 1952. They are: New York, $110 million; Texas, $88 million; South Carolina, $73 million; Pennsylvania, $66 million; and Michigan, $56 million.

New York and Texas are running true to form. They finished one-two in both 1950 and 1951. South Carolina is a newcomer to the ranks of major new housing areas and already is 22% above its $60 million total for the entire year 1951.

Pennsylvania continues among the top states and Michigan is doing better than last year when it had the seventh highest volume of housing.

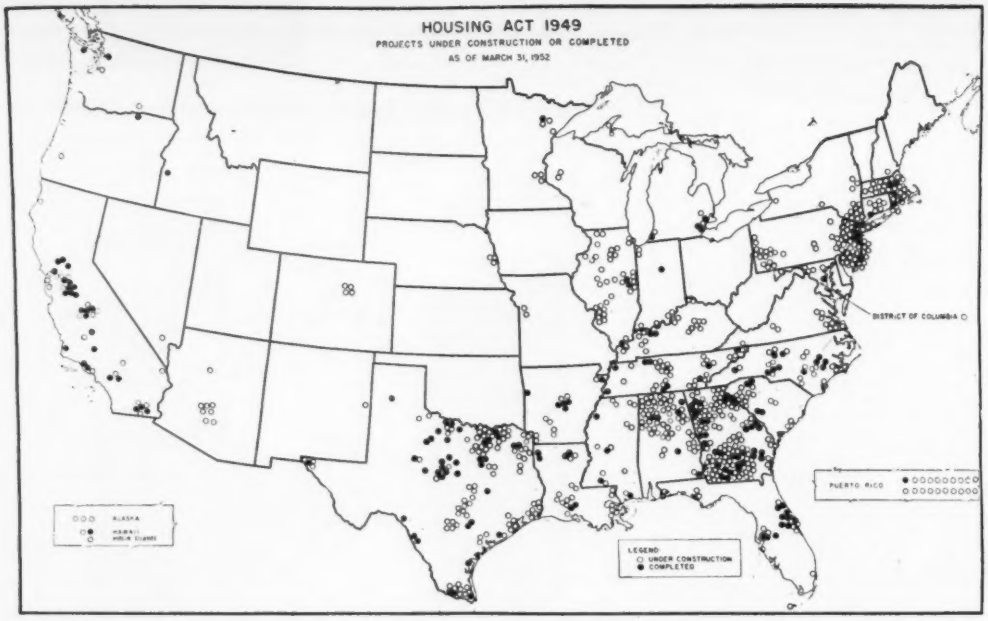
Rounding out the top 10 states, Georgia is coming strong in 1952 with $2 million reported at the end of the first quarter. That is equal to 47% of the total housing contracts in that state last year.

California, with $42 million, is in seventh place this year in housing awards, compared with fourth place in 1951 and third in 1950.

At the end of the first quarter, Florida and Kentucky each with $39 million, and Tennessee, with $31 million, had racked up awards equal to half or more of their volume for all of last year.

• **South leads in public housing**—Public housing in the first quarter of this year played its most important role in the South, which reported $119 million in contract awards—50% of the nation's total. Public housing accounted for 38% of all mass housing awards in the South. (See map for pattern of starts.)

(*Continued on next page*)



Construction business . . .

Kentucky's $29 million represented 73% of all mass housing contracts in that state, and in Tennessee, public housing amounted to $16 million, which is more than 50% of all new mass housing in the state.

States west of the Mississippi River, but not including the Far West, ranked second with $34 million in public housing awards. Texas accounted for $22 million.

In the Far West, California had $17 million, or almost all of the public housing volume in the entire region. Public housing accounted for 42% of all the mass housing contract awards reported for California in the first quarter of this year.

• **Progress report**—The federal Public Housing Administration, reporting progress of its program under the Housing Act of 1949, sets a total of almost 353,000 units reserved since the passage of the act.

Of this, more than 20,000 public housing units have been completed, with another 99,000 under construction. That leaves nearly 234,000 reserved units that have not been started.

• **Defense housing lags**—Defense housing has not yet proved to be an important factor in the housing picture. The Housing and Home Finance Agency reports 71,570 units had been programmed in 140 areas, as of Feb. 20.

Although most of these units had been approved, few were actually under construction. Only a small number of units have been completed.

Based on progress reports from 59 areas, representing 39,650 of the 71,570 programmed units, only 6,898 units were reported underway and only 876 completed.

Alternates confuse bidding

The Corps of Engineers in California have come up with a set of alternate bids that may well reach new heights of confusion. The bids—opened in Sacramento April 18—are for construction of barracks and mess halls for the Air Force's Camp Beale near Marysville, Calif. Alternates have offered problems before (ENR Jan. 10, p. 83).

The Engineers' design included two choices—15 three-story concrete and concrete block barracks plus 4 mess halls or 23 two-story wood frame barracks plus 4 messhalls. It was expected that the wooden barracks would be cheaper and they are. But the Air Force was limited as to funds. So even though they wanted the longer-lasting concrete barracks they included the wood frame alternate. Besides that, bids were invited on contractor designs.

Low bidder on all counts was Maxwell Gibbs Co. and Associates, Los Angeles. Their figure for the wood frame work was $3,310,699.43. They submitted an alternate on their own design of $3,209,432.43. This compares with the second low bid of $3,633,855 from Stolte, Inc. And the government estimates of $3,027,724.

Gibbs' low bid on the Engineers' masonry design was $3,589,080.82. A Gibbs-designed tilt-up alternate came in at $3,239,080.82. Second low bid on the Engineers' design was $4,380,905.65 from Barrett and Hilp, Theo. G. Meyer, Chas. B. Harney and Macco Corp., a combination. The Engineers' estimate was $4,719,433.

The Air Force would like very much to have the masonry buildings and they probably can afford it at the Gibbs' figure. But Gibbs was so much lower than the next bid and the Army estimate that their bid is looked at with some question. Some officials fear a computing error.

Another surprise was that no bidder used a lift-slab, Presan analyzed design originated by Albert C. Martin, Los Angeles Architect, and offered to any contractor who would use it.

CHURCH STRUCTURES fit between the advanced and the traditional. This is the $115,000 St. Columba Church at Chester, N. Y., built on the foundations of a burned-out structure. The building has painted concrete-block walls, (hollow), wood laminated arches, aluminum roofing. Architect was J. Sanford Shanley, New York City.

Who buys construction?

I—The Roman Catholic Church

First of a series

Working away without fanfare all over the United States is one of the biggest private buyers of construction in the world: The Roman Catholic Church. Its expenditures for buildings (the emphasis is now heavily on schools and institutional structures) affect not only construction but often the communities in which they are made.

Because of the vast size of the Church and the degree of autonomy enjoyed by the various dioceses, a reliable figure on total yearly construction expenditures is quite difficult to obtain.

But a closer idea of the size of that expenditure is contained in these figures: The Archdiocese of New York—which includes seven upstate New York counties and three of New York City's five boroughs—has been committing about $40 million a year for construction ever since the end of World War II.

The Diocese of Brooklyn—comprising the counties of Kings (Brooklyn) and Queens, and Nassau and Suffolk on Long Island—has been committing about $14 million a year since the end of World War II, and now has proposed work on hand totaling more than $70 million.

• **Lessons and practice**—The practices vary somewhat as between the New York and Brooklyn dioceses, but as befits an organization long skilled in administration and careful expenditure of money of its parishioners, here are some of the tenets by which the church acts:

Neither diocese maintains a technical staff big enough to do more than supervisory engineering. All engineering and architectural designing is done by private consultants, selected on the basis of experience.

In both, bidding is always private, and bidders are selected from a prequalified list. In New York, contractors wishing to bid on church work must fill out the standard AGC "Contractors' Experience Questionnaire and Financial Statement"; in Brooklyn, they must answer to a Diocesan Board of Consultors, who investigate financial standing, responsibility, previous contracts, and the like.

The Church, as owner, makes the award to the low bidder, (even if it has to check unit prices on close bids) and must approve selection of and award to subcontractors.

Almost invariably, awards are made on a lump-sum basis, seldom if ever on cost-plus, and only very occasionally on any other basis.

Bids too low are questioned (though on no set percentage basis), and consistent bids too high will have only one result—the high bidder won't be invited to bid again.

New York normally requires no surety bonds on the contractors (and has never had a default); Brooklyn is now debating removing its surety bond requirement. However, changing economic conditions (such as those occasioned by the Korean action) can affect this policy.

• **And details**—Over many years, the Church has set up some strict requirements in the matter of building materials and practices although it is open to the "or equal" phase of specifications. For instance:

New York prefers incandescent to fluorescent lighting in the diocese (poor custodial service and hence high maintenance costs plus objections to fixtures, noise and other features are among the reasons); will permit aluminum or other metal windows—but prefers double-hung, wood windows wherever possible for windows that are not fixed (because of dust and air leakage); Brooklyn has found that aluminum windows corrode in the sea air of its parishes, but will use some in a few of its inland areas.

New York wants lead weather capping on copings; wants 20-ounce copper for flashings instead of 16-ounce; likes cavity-wall construction.

Neither diocese will permit use of cast stone—maintenance being the problem again.

In general, however, types of construction are conventional—"not too modern, not too far behind," say the technicians. Liturgical dictum (as to positioning the altar and other religious symbols) dictates certain features of floor plans of churches. The rest of the problem is architectural.

• **How it's done**—The word "permit"

(*Continued on next page*)

TYPICAL of the heavy program of school construction of Roman Catholic Church organizations is this $2-million Saint Catherine's Academy, a school for 600 girls on Pelham Parkway in The Bronx. Eggers & Higgins, New York City, are architects.

as used here presents a nice case of semantics—and a study of it provides a good insight into the workings of the Church in these matters.

As a matter of fact, "permit" isn't quite the proper word. Here's why:

In buying construction, each parish, institution or other segment of the Church works almost as an individual, in that the decision to build (with very few exceptions) is made at a local level —that of the parish priest or institution head—and funds to pay for the entire cost of the work are raised at a local level.

However, all such building proposals must be submitted to a higher group for approval: In the New York Archdiocese, to the Archdiocesan Council, headed by the Cardinal and including other high dignitaries on the basis of their knowledge of requirements: in Brooklyn, to a Board of Consultors, headed by the diocese archbishop. (As a matter of fact, these bodies differ only in title—such a group of high clergy, of course, functions in every Catholic diocese.)

These bodies—after approving the proposed plan for construction—then call in the New York Archdiocesan Building Commission or the Brooklyn Diocesan Building Office, which proceed to act as consulting engineers to the owner. They let all contracts, supervise the drawing of plans and specifications, act as the owners' agent during construction, and, most importantly, approve all bills for services and materials.

• **That's not all**—Their long experience in dealing with builders makes them well fitted for the task—and the vast resources of the Church's experience and records lend added weight.

For there are many problems unrelated directly with construction that must be taken into account: The fact that many of the "owners" lack a great deal of experience in the construction line, and have no real conception of the needs (Example: A parish that wanted to build a five-classroom school, with auditorium and gymnasium, on a relatively small city lot).

There is the fact that the Church sometimes leads and sometimes follows population trends, and in any case its structures often profoundly affect the areas in which they are located.

And in addition to new work, these same groups must also oversee repair and major alteration work; see to it that there are no violations of building or other municipal ordinances, and the like.

• **Who does it**—In the New York Archdiocese, the Building Commission is headed by Msgr. Walter P. Kellenberg, a native New Yorker, who, although not a construction man by training, rests easily on the excellent education and broad experience as a priest.

He is assisted by two lay engineers: Thomas A. Kelly, a graduate of Ohio State University and a veteran of 28 years in the construction business (18 for private contractors, 10 with the Church); and Eugene E. Hult, a civil engineering graduate of Carthage College (Ill.) and a 16-year construction veteran.

In Brooklyn, the Diocesan Building Office is headed by Father Ronald Macdonald, who holds degrees in civil, mechanical and electrical engineering (from New York University and Brooklyn Polytech); he is backed by Charles S. Ward, a registered architect.

In both dioceses, the jobs require vast amounts of tact and patience, as well as understanding of the construction industry.

NPA cites increased machinery needs

The National Production Authority last week said that production requirements for power cranes and shovels in 1952 would be 11,251 units in the smaller sizes (up to 2½ cu yds) and 732 larger machines (3 cu yds or bigger).

Requirement needs are greater than the production figures for either of the last two years.

In 1951, manufacturers produced 11,336 excavators; 11,057 smaller machines and 279 big ones. In 1950, the production figures were: 8,053 small machines and 256 large ones.

NPA announced the figures at a power crane and shovel manufacturers industry advisory committee meeting.

During the meeting, the manufacturers enthusiastically approved an amendment to M-43 that would remove the need for scheduling and filing periodic reports on current and future production.

The amendment would also limit the use of priority ratings to the Defense Department, Atomic Energy Commission, machine tool manufacturers and NPA special directives.

Board created to judge contractors' responsibility

The Mississippi legislature has created a new five-man State Board of Public Contractors to assist state, district, county and municipal governments in determining the responsibility of public contractors on projects involving public funds.

An annual $100 special privilege license tax is assessed on public works contractors under the law.

The board will be composed of five public contractors with 10 years experience. Of the board's members, one must be experienced in highway construction, one in building construction and one in either public utility or mechanical trades.

New England Thruway boosts ENR backlog

ENGINEERING NEWS-RECORD's backlog of engineered construction this month moved up to $63,124 million in proposed work. This was $219 million more than the $62,905 million reported last month and $7,960 million more than the toltal for the month of March, 1951.

Biggest increase this month was in the backlog of streets and roads. This category went up $118 million, from $5,159 million to $5,277 million.

Prime factor in this increase was the proposed $150-million Boston east-west toll road to connect Massachu-

setts with the New York State Thruway.

After streets and roads, the next biggest increase came in proposed commercial construction, which rose $62 million, from $8,414 million to $8,476 million.

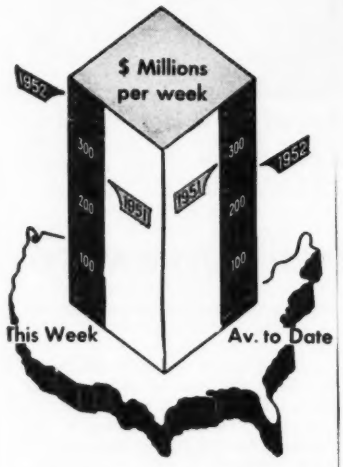
Industrial building was third, going from $9,367 million to $9,311 million, for a $56-million increase.

Minor increases occurred in the backlogs of sewerage projects, which moved up $13 million to $2,408 million and earthwork, drainage work which advanced $4 million to $7,446 million. Private unclassified construction went up $5 million to a new total of $6,316 million.

(*Continued on next page*)

Activity This Week

As reported to ENR
(in millions of dollars)



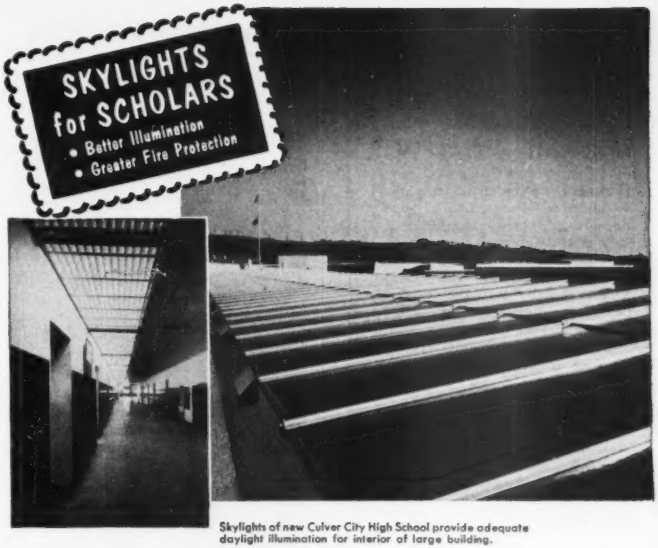
Contracts by type of work

	This Week	Cumulative 17 wks 1952	1951	% chge
Waterworks	$3.3	$81.5	$79.5	+3
Sewerage	6.6	72.8	105.1	−31
Bridges	18.0	114.4	90.1	+27
Highways	58.0	415.5	314.3	+32
Earthwork, waterways	12.1	180.8	205.8	−12
Buildings:				
Public	54.1	537.2	800.9	−33
Housg., pub.	15.5	328.1	183.6	+79
Housg., priv.	90.2	916.3	648.2	+41
Commercial	8.7	167.0	218.8	−24
Industrial	75.9	967.6	1,809.4	−46
Unclassified	28.7	427.2	532.1	−20
Total	**$371.1**	**$4,208.4**	**$4,987.8**	**−16**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1913	1926	1949
Constr. Cost.	Apr. '52	554.12	266.36	116.16
Bldg. Cost	Apr. '52	407.81	220.45	115.42
Volume	Mar. '52	509	207	147



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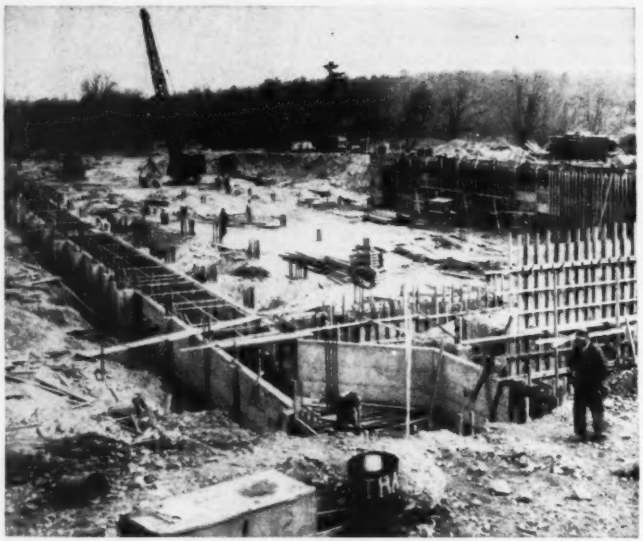

WORK WAS HALTED on a chronic diseases hospital in Boston shortly after this picture was taken. The project came to a standstill when the state's Supreme Court ruled that an $11,179,526 contract was awarded to the wrong company. The ruling came after more than $1 million worth of construction had been performed by John Bowen & Co., Inc.

Court voids $11 million award

The Massachusetts Supreme Judicial Court has ruled that an $11,179,526 contract awarded to John Bowen & Co., Inc. by the State Department of Public Health for a chronic disease hospital at Mattapan (ENR Nov. 29, 1951, p. 68) had been illegally awarded.

The high court's ruling paved the way for the contract to be awarded to J. Slotnick Co., which claimed to be the low bidder on the Mattapan job.

In its ruling, the Supreme Judicial Court held that the Slotnick bid totaled—on paper—$159 more than the Bowen bid, but that the Bowen bid did not include the additional three-quarters of 1% required by state law to cover a bond guaranteeing performance by subcontractors. This would amount to $83,846.43.

Bowen has been paid $1 million since the start of work last fall until April 10 when work on the hospital was halted.

State Health Commissioner V. A. Getting's office is making a complete investigation of the contract dispute involved.

Getting has conferred with Gov. Paul A. Dever and Attorney General Francis Kelly. Getting is attempting to get an equitable adjustment for the Bowen company for work already completed on the project.

The Attorney General's office has not handed down a decision on the case and work is at a complete standstill. The question of whether the Slotnick Co. will get the award is still up in the air.

Attorney John Burke, counsel for the Bowen company, says there is a question of whether the Massachusetts Public Buildings Commission, which must approve any contract, will authorize the Slotnick firm to take over the work—or whether the Commission will demand new bids.

Attorney Claude Cross, counsel for Slotnick, said he will contend the statute provides the contract shall be awarded to the lowest bidder.

Under this explicit working of the law, the Slotnick firm must get the contract, Cross said.

Allan E. Gifford and 27 Boston taxpayers fought the multi-million contract award to the Bowen firm in petitions brought before Suffolk Superior Court. These petitions were dismissed by Judge Francis J. Good, but the Supreme Court reversed this decision.

No change due in VA, FHA rates

In spite of the growing demands of the banking fraternity, it became obvious last week that there won't be any immediate change in permitted interest rates on VA or FHA mortgage loans.

That conclusion was one of the few reachable after a week of conflicting statements and opinions revolving around the condition of sources that supply money for private construction.

Biggest question (and the one that caught the public eye quickest) was on housing markets. Said Franklin Richards, federal housing administrator: 1952 will probably see start of more than 1,000,000 units without any increase in maximum interest rates authorized. Said spokesmen for the Mortgage Bankers Association: The interest rate (4% on VA, 4½% FHA) is too low to attract enough capital.

Appearing before the MBA spring meeting in New York, Richards hotly defended the government's position against raising the rates, with the statement that (although the market is said to be tight at the moment) the same volume of residential mortgages have been recorded as last year in the same period.

But among the objections the bankers made to such mortgages was this one: Under VA and FHA rules, the cost of discounts, (which bankers said were dropping) cannot be passed on to the original home purchaser—the situation, said one "is akin to UN industry that faces wage increases or other expenses, but isn't allowed to pass it on to the consumer."

But Richards and T. B. King, director of the VA's loan guarantee section, made it clear that the government was planning no changes in the rates for some time to come.

• **Buyers' market**—While one group of bankers thus doubted the emergence of another housing boom, the United States Savings and Loan League, through Norman Strunk, executive vice president, saw the emergence of something else—a full-blown buyers' market in housing.

"The 1952 home buyer is in the saddle," said Strunk. "He has a good supply of housing to choose from (excepting in a few critical defense areas), and he can be reasonably certain that prices will not rise to any appreciable extent. And even in the critical defense areas, unless there is an all-out war, it is impossible to see the housing congestion such as world war 2 brought about in leading industrial centers."

But Strunk lined up with the government men in one regard—he said that his group's 4,000 members would go slow in urging relaxation of present curbs on home mortgage credit for new construction. He also predicted a 1,000,000-unit year for 1952.

• **Money getting easier?**—Despite the conflict of statements and predictions, one place all forces agreed was that money would probably get easier this year.

A big factor will be the growing pension trusts, according to Norman Barnes, Chicago realty broker and consultant. In a speech last week, he pointed out that such pension trusts may ultimately have assets of $300 billion (compared to life insurance companies—now biggest purchasers of real estate investments, which have assets in the neighborhood of 65 billion) and must "inevitably" turn to real estate and construction as an investment outlet.

Such a tremendous source of money would have the effect of increasing competition for such investments—thus driving down interest rates through more competitive bidding.

Finance briefs

• **Bonds for Missouri**—A new Missouri law opens the way for school districts in cities from 1,500 to 160,000 population to finance construction of athletic stadiums through revenue bond issues, presumably to be retired from admission fees charged to athletic events.

• **Montana hospital**—Montana state administration officials have opened a campaign for voter approval of $5 million bond issue to finance buildings for the state hospital at Warm Springs and a state training school at Boulder.

• **High time**—Four minutes of time (the margin by which a bond buyer missed getting his bid to an opening at Arlington, Va.) cost the city about $75,000 officials figured. Bid opening time was 10 a.m., for sewer and school bonds. The bidder's agent got a phone call at his Washington, D. C. office at 9:52 a.m., got to Arlington at 10:04. His bid was $75,000 lower than the one accepted.

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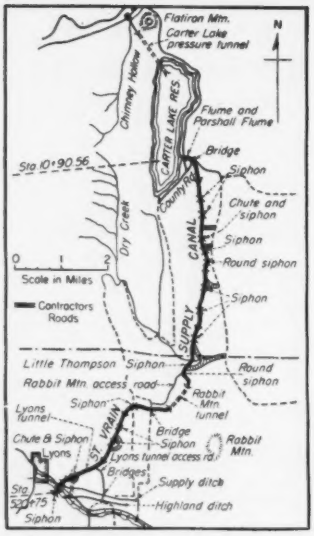

Tunnels, siphons, lining bid on Colo. canal job

The St. Vrain Supply Canal, a ten mile irrigation project in the Colorado foothills, will cost around $2.6 million dollars. Work includes 8.4 miles of earthwork, concrete lining in 4.1 miles of canal, 4300 feet of siphons, 3000 feet of rectangular flume, chutes, and conduits, and two 8'6" horseshoe tunnels 4362 feet long. The job also requires earthwork for access, farm and operation and maintenance roads; for timber bridges and canal fence structures; and for the flumes, chutes, conduits, tunnels, siphons and siphon spillways, transitions and turnouts.

The canal, part of the Colorado-Big Thompson Project, is located in Boulder and Larimer Counties, near Lyons, Colorado.

All materials are to be supplied by the contractor except rubber water stops, which will be furnished by the Government. The canal is being built by the Bureau of Reclamation. L. N. McClellan is chief engineer and G. R. Highley, construction engineer. Work must begin 30 days after the notice to proceed and be completed in 700 calendar days. The liquidated damages are set at $300 per day.

Area wage rates range from $1.55 to $1.90 per hour for laborers. Minimum wage rates for power equipment operators range from $1.60 to $2.36; electricians from $1.06 to $2.65; sheet metal workers from $.93 to $2.325; truck drivers from $1.35 to $2.05. Minimum wages for carpenters are $2.10; cement finishers, $2.25; painters, $2.10; plumbers, (Boulder County), $2.64, (Larimer County), $2.40; pipe fitters, (Boulder County), $2.64, (Larimer County), $2.40; ironworkers, structural and reinforcing, $2.35.

The contractor has been granted 92 tons of carbon steel under a DO-J8 priority rating for work under the specifications.

Winston Bros. Co. was awarded the contract March 24, 1952 for schedules nos. 1 and 4 for $2,268,292 which is $144,586 below the engineer's estimate. The siphons were bid two ways; precast concrete pipe and monolithic. Schedules Nos. 2 and 3 are alternates. Adler Construction Company was awarded the contract on schedule No. 2 for $374,570.

Bidders include:

Earthwork, canal lining and structures, schedule No. 1

1C	Winston Bros. Co., Monrovia, Calif	$1,618,557*
2	Colorado Constructors, Inc., Denver	1,712,030
5	Guy F. Atkinson Co., Denver	2,146,883

Bids: 3-11-52 Items	Unit	Quantity	Unit prices 1C	2
Exc, for canal, com	cy	223,000	$0.50	$1.10
rock	cy	163,000	1.65	1.10
Overhaul canal & rds	stay	117,000	0.03	0.05
Compacting embankments	cy	71,000	0.27	0.35
Exc, drain chanl & ditches common	cy	42,000	0.50	0.60
rock	cy	5,500	2.70	3.00
Trim earth fndn for conc canal lining	sy	6,000	1.25	1.50
Prep rock fndn for conc canal lining	sy	65,000	1.25	1.50
Exc, for struct, com	cy	42,900	0.85	1.55
rock	cy	20,500	2.20	1.55
Backfill about struct	cy	38,000	0.50	0.50
Fill at top of conc lin	cy	9,800	0.90	1.50
Compact bkfill about struc	cy	11,500	2.50	4.00
Dry-rock paving	sy	1,450	6.00	6.00
Loose rock bkfl	cy	450	2.00	3.00
Grade s & g dr 4" sewpipe	lf	200	2.00	2.00
6" sew pipe	lf	580	2.10	2.50
Sewer pipe, cmt jt-4"	lf	80	2.00	2.00
6"	lf	250	2.00	2.50
Riprap, 18"	cy	1,100	2.20	6.00
24"	cy	1,000	2.20	7.00
Gravel bed under riprap	cy	320	6.00	6.00
Exc, all classes, for rds	cy	10,000	1.00	1.50
Selected surf for rds	cy	2,800	3.50	2.50
Concrete in struct	cy	5,350	75.00*	60.00
unreinf conc canal lin	cy	8,000	18.00	23.00
reinf conc canal lin	cy	500	18.00	24.00
Cement	bbl	23,025	4.60	5.00
Reinf bars	lb	928,000	0.135	0.13
Elas fil matrl in jts	sf	30	2.00	2.50
Rubber water stp in jt	lf	2,600	1.00	1.50
Untreat timbr in struct	Mfbm	36.5	400.00	320.00
treat timbr in struct	Mfbm	4	450.00	370.00
Std str conc culv pipe				
12"	lf	20	2.50	4.00
30"	lf	72	9.00	10.00
36"	lf	152	11.00	13.00
42"	lf	154	15.00	17.00
48"	lf	503	20.00	21.00
54"	lf	363	27.00	27.00
60"	lf	363	33.00	34.00
66"	lf	414	38.00	38.00
72"	lf	89	46.00	45.00
Ext str conc culv pipe				
36"	lf	32	15.00	15.50
42"	lf	20	18.00	18.00
48"	lf	72	23.00	24.00
54"	lf	48	28.00	28.00
60"	lf	50	34.00	35.00
66"	lf	25	42.00	40.00
Corr metal pipe, 24"	lf	96	6.00	6.50
36"	lf	66	10.00	11.00
42"	lf	64	12.00	13.00
Bids: 3-11-52 Items	Unit	Quantity	Unit prices 1C	2
Corr—met pipe arch				
43"x27"	lf	84	11.00	15.00
58"x36"	lf	112	16.00	18.00
multiplate 7'9"x5'4"	lf	44	37.00	48.00
Calf e guards	ea	2	900.00	550.00
Removing fences	mi	1.6	400.00	400.00
Barb—wire fences, ROW	mi	12.4	1,700.00	2,000.00
Metal fence gate ROW fence	ea	1	80.00	100.00
Canal fence struct	ea	7	320.00	75.00
Wire cable guard fences	lf	240	4.70	5.00
Slope screw—lift gate,				
30" 1 to 1	ea	1	600.00	280.00
36" 1 to 1	ea	1	725.00	300.00
Slide gate & hoist, 4'x4'	ea	1	1,100.00	700.00
Gaging station shelters	ea	6	900.00	300.00
Miscellaneous metalwork	lb	5,500	0.85	1.00

* If awarded schedule nos. 1 and 4, deduct $.400 per cubic yard from unit price bid on concrete in structures and reduce total figure to $1,597,157.

Monolithic-concrete siphons, schedule no. 2

1C	Adler Const. Co., Loveland, Col	$374,570
2	Winston Bros. Co., Monrovia, Calif	442,556
3	Guy F. Atkinson Co., Denver	538,105

Bids: 3-11-52 Items	Unit	Quantity	Unit prices 1C	2
Exc, for struct, com	cy	12,200	2.00	3.50
rock	cy	7,900	5.00	3.50
Backfill about struct	cy	16,100	0.70	1.30
compacting	cy	1,200	6.00	3.50
Conc in struct	cy	1,880	70.00	80.00
Cement	bbl	2,620	6.00	5.00
Reinforcement bars	lb	475,000	0.14	0.16
Rubber water stp in jts	lf	1,220	1.50	1.30
Miscellaneous metalwork	lb	3,500	0.70	1.00
Plate-stl liner mono siph	lb	223,000	0.30	0.43
Contr jts stl-lined siph	ea	4	1,500.00	1,400.00

Concrete pipe siphons, schedule no. 3

LB	Peter Kiewit Sons' Co., Denver	$320,833
2	Colorado Constructors, Inc., Denver	343,690
4	Guy F. Atkinson, Co., Denver	511,960

Bids: 3-11-52 Items	Unit	Quantity	Unit prices 1	2
Exc, for struct, com	cy	10,500	0.75	3.50
rock	cy	7,100	2.25	3.50
Backfill about struct	cy	12,800	0.75	0.75
Compacting	cy	1,650	4.00	5.00
Conc, in struct	cy	300	90.00	80.00
Cement	bbl	2,440	5.00	5.00
Reinforcement bars	lb	57,000	0.14	0.16
Miscellaneous metalwork	lb	3,500	1.00	1.00
Noncylindar conc pipe, 102"				
symbol 5-A-50	lf	257	111.00	124.00
symbol 5-A-75	lf	104	115.00	124.00
symbol 5-A-100	lf	104	120.00	124.00
symbol 5-A-125	lf	104	123.00	124.00
symbol 10-A-50	lf	188	120.00	124.00
symbol 10-A-75	lf	32	122.00	124.00
symbol 15-A-50	lf	72	127.00	124.00
symbol 5-B-150	lf	120	133.00	124.00
symbol 5-B-175	lf	120	137.00	124.00
symbol 5-B-200	lf	120	140.00	124.00
symbol 5-B-225	lf	120	145.00	124.00
symbol 5-B-250	lf	120	147.00	124.00
symbol 5-B-275	lf	56	150.00	124.00
symbol 10-B-275	lf	228	162.00	124.00

Tunnel, schedule no. 4

LB	K. S. Mittry Constr. Co., Los Angeles	$681,383
2C	Winston Bros. Co., Monrovia, Calif	*712,835
5	Peter Kiewit Sons' Co., Denver	994,329

Bids: 3-11-52 Items	Unit	Quantity	Unit prices 1	2C
Exc, in open cut, com	cy	3,500	1.75	3.00
rock	cy	8,000	1.75	3.00
all cls, in tunnel	cy	13,900	25.00	*28.00
for tunnel enlarg	cy	150	30.00	30.00
Backfill about struct	cy	100	1.00	2.00
compacting	cy	50	2.75	4.00
Permanent stl tunnel suppt	lb	260,000	0.18	0.17
timbering in tunnel	Mbfm	140	275.00	200.00
Tunnel roof suppt bolts	lf	2,600	3.25	2.10
Drill feel or pilot holes	lf	450	1.60	1.50
gr holes thru conc tunnel lining	lf	450	1.40	1.50
Grout pipes & connect	lb	450	1.00	1.00
Pressure grouting	cf	4,350	3.50	2.50
Conc, in struct	cy	120	70.00	85.00
in tunnel lining	cy	4,200	29.00	35.00
Cement	bbl	7,570	6.00	4.50
Reinforcement bars	lb	15,400	0.15	0.15
Miscellaneous metalwork	lb	200	0.45	1.00
Rubber water stps in jts	lf	125	1.80	1.00

* If awarded schedule nos. 1 and 4, deduct $3.00 per cubic yard from unit price bid on excavation all classes in tunnel and reduce total figure to $671,135.

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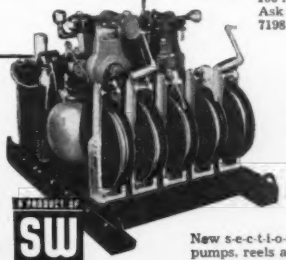

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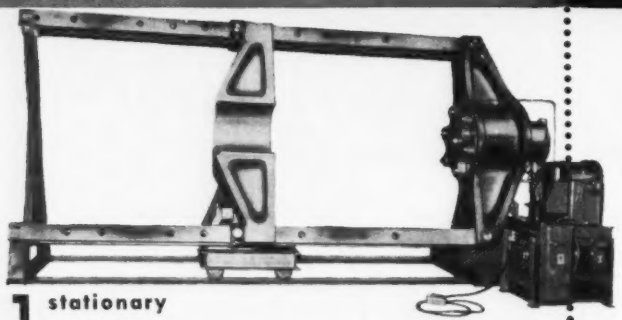

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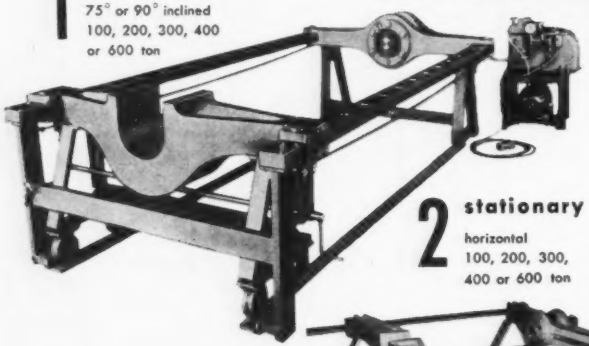
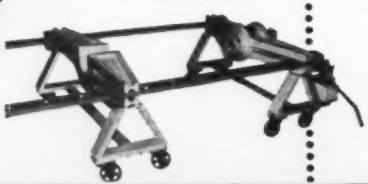


2 stationary
horizontal
100, 200, 300, 400 or 600 ton



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HYDRAULIC POWER EQUIPMENT

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.
ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲**MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 1000 Nashua St., Boston,

M. Dematteo Constr. Co., 200 Hancock St., Quincy, Mass. CA, **$2,117,612,** est. $2,100,000. U-331 (10) contr. C. state hy. constr., Manchester and Wenham, CD 4/7, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Mt. Vernon Bridge Co., Mt. Vernon, O. LB **$2,296,905** est. $2,175,000. steel suptrstructure for elevated hy., Haymarket Square to North St., sect. J. F. Fitzgerald Expressway, Contr. D-2, Boston;

John McCourt Co., 910 Huntington Ave., Boston, Mass. LB **$208,852,** est. $235,500. hy. work, Bennington St., East Boston. Bids April 15. CD 4/2 and 3/18.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

V. Barletta Co., 10 Whipple Ave., Roslindale, Mass. CA **$3,647,578.** est. $3,000,000. Contr. D-1 and H-1, superstructure surf. roads, approaches, Haymarket Square to Oliver St., J. F. Fitzgerald Expressway, Boston. CD 4/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Park Constr. Co., Inc.,** 40 Court St., Boston, Mass. LB **$1,493,189.** 123 HOUSING units, Proj. 3-3, CAMBRIDGE, MASS. Cambridge Housing Auth., 51 Inman St., Cambridge, Mass. Bids April 3. CD 3/4.

▲ **Volpe Constr. Co.,** 54 Eastern Ave., Malden, Mass. LB **$1,093,443,** est. $1,000,000. HOSPITAL addn., Evergreen St., FRAMINGHAM, MASS. Union Hospital, Evergreen St., Framingham, Mass. Bids Apr. 8. CD 3/11.

▲ **J. W. Bishop Co.,** 109 Foster St., Worcester, Mass. CA **$1,976,900.** Wachusett Regional High SCHOOL, HOLDEN, MASS. Wachusett Regional School Dist. Comn., Holden, Mass. CD 3/18, under LB.

▲ **Realty Constr. & Engineering Co.,** Inc., 53 State St., Boston, Mass. Owner Builds. **$3,600,000.** Four hundred 34x248 ft. RESIDENCES, WALTHAM, MASS.

▲ **Frouge Constr. Co., Inc.,** 74 Goodsell St., Bridgeport, Conn., CA, **$1,037,000,** SCHOOL, Church Hill Rd. and Middlebrook Ave., TRUMBULL, CONN. Town, Supt. Schools, Trumbull, Conn. Awarded Apr. 8. CD 3/18, under LB.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **N. J., Ancora**—HOSPITAL—B.A. 5/1—State Div. Purchases & Property, State House, Trenton, State Mental Hospital, $12,000,000. Ellwood D. Powers, 972 Broad St., Newark, engr. Epple & Seaman, 901 Broad St., Newark, archts. CD 3/27.

▲† **Pa., Phila.**—GENERAL SERVICES AND SUPPLY OFFICE—B.A. 5/1—Dept. Navy, P. Wks. Office, Phila. Naval Base, addnl. facilities, general services and supply office, NOY 70149, Spec. 31783., $2,-054,600 Baader, Young & Schultz, 1500 Walnut St., archts. CD 10/19.

▲ **Pa., West Mifflin**—HIGH SCHOOL—B.A. 5/2—Bd. Educ., of West Mifflin, Terrace, 2 story 165x449 ft. brick on block Edison Junior High School. $1,400,000. Plans deposit $50. Button & McLean, 119 E. Montgomery St., N. S., Pittsburgh, archts., bids Apr. 24 rejected. CD 4/11.

▲ **Pa., Oxford**—HIGH SCHOOL, etc.—B.A. 5/13—Oxford Area Joint School Auth., Oxford, high school and elementary school, etc., $2,500,000. Extended date. Buchart Engineering Co., 611 W. Market St., York, engr. CD 3/27.

▲ **Pa., Sewickley**—HOSPITAL—B.A. 5/14—Sewickley Valley Hospital, Blackburn Rd., general constr. 6 story bsmnt., brick hospital. $1,000,000. Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, Ill., archts. CD 1/15/51.

▲ **Pa., Tobyhanna**—BUILDINGS—B.A. 5/23—U. S. Eng., 121 N. Broad St., Phila., 18 bldgs., utilities and site imprvs. $30,000,000. Gibby & O'Malley & Stopper, Inc., Liberty Trust Bldg., Phila., engr.archt. CD 4/11.

† **N. J., Fort Monmouth**—POST COMMUNICATIONS—B.A. About 5/27—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., post communications bldg., $500,000—$1,000,000. Extended date. Ziegler, Childs & Paulson, 921 Bergen Ave., Jersey City, N. J., archts. CD 3/13.

HEAVY CONSTRUCTION

LOW BIDS AN CONTRACTS

▲ **Peerless Constr. Co.,** 330 W. 42 St., New York 18, N. Y. CA. **$1,096,730,** electronic test facilities at Griffiss Air Force Base, ROME, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 28. CD 2/14.

▲ **NEW JERSEY**—State Hy. Dpt., State Hy. Office Bldg., Trenton,

American Bridge Co., 71 Broadway, New York, N. Y., CA, **$4,734,701,** construction superstructure for bridge over Hackensack River on Sta. Hy. Route 25 between Jersey City and Kearny, Fed. Aid Proj. AU 192 (2) Hudson Co. Bids Apr. 1. CD 4/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Turner Constr. Co.,** 420 Lexington Ave., New York 17, N. Y., CA **$6,859,500,** two TREATMENT BLDGS. 127 and 128 at Central Islip State Hospial, CENTRAL ISLIP, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 26. CD 3/28, under LB.

▲ **Norwich Green, Inc.,** c/o E. J. Cappelo, archt., 45 Middleneck Rd., Great Neck, N. Y., Owner Builds. Approx. **$1,000,000.** 107 HOUSES on 24-acre tract on Pine Hollow Rd., EAST NORWICH, N. Y.

Harold & Isidore Strauss, c/o Norman Dimen, archt., 67 Middle Neck Rd., Great Neck, N. Y. Owner Builds. **$900,000.** 30 HOUSES, on tract on Somerset Dr. North. GREAT NECK, N. Y.

▲ **Dara Gardens,** c/o Philip Birnbaum, archt., 12 E. 48 St., New York 17, N. Y. Owner Builds. Approx. $4,000,000. Housing eight 6-story buildings for 536 families, on 8-acre tract bounded by 150 St., 71 Ave., 72 Rd. and Kissena Blvd. KEW GARDENS, N. Y.

▲ **Merrick Shores Homes,** c/o Stanley Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. Approx. $2,500,000. 132 HOUSES on 40 acre tract at Merrick Ave. and Nohrson Rd., MERRICK, N. Y.

▲ **Sherwood-at-Westbury Homes,** c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y., Owner Builds. Approx. $1,000,000. 80 HOUSES on 20-acre tract, WESTBURY, N. Y.

▲ **Brush Hollow Gardens,** c/o Alwyn Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y., Owner Builds. Approx. $1,000,000. 115 HOUSES on 23-acre site, Brush Hollow Rd., WESTBURY, N. Y.

▲ **College Towers Apartments,** c/o Mascolo & Masumian, archts., 880 Bergen Ave., Jersey City, N. J. Owner Builds, $6,000,000, 20 bldgs. for 800 families on tract at Audubon and West Side Aves., JERSEY CITY, N. J.

▲ **Tishman Realty & Constr. Co.,** 455 Park Ave., New York 11, N. Y., Owner Builds, $16,000,000, 5 fourteen story bldgs. for 2,095 families on 25-acre site at Irvington Ave. and Mt. Vernon Place to be known as Ivy Hill Park, NEWARK, N. J. Kelly & Gruzen, 80 Fifth Ave., New York, 3, N. Y., archts.

▲ **Penn Valley Constructors, Inc.,** Morrisville, Pa., Separate Contracts. **$2,160,000.** RESIDENTIAL DEVELOPMENT, Lovett Tract River Rd., MORRISVILLE, PA.

▲† **Brotherton Constr. Co.,** 1025 S. 21 St., Harrisburg, Pa., CA. **$1,249,730.** OFFICE and WAREHOUSE, utilities, paving, etc., NEW CUMBERLAND, PA. U. S. Eng., 24 St. and Maryland Ave., Md. Bids Mar. 11. CD 3/27, under LB.

▲ **The Kuljian Corp.,** 1200 N. Broad St., Phila., Pa. CA. Approx. **$1,500,000.** design and construct modern SERVICE SHOP, WAREHOUSE, PHILA., PA. General Electric Realty Corp., 1405 Locust St., Phila., Pa. Bids Jan. 31. CD 2/1.

▲† **Five Boro Constr. Corp.,** 2 Lafayette St., New York, N. Y. LB **$1,692,000.** interior ballistics LABORATORY utilities extensions, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Md. CD 3/3.

▲ **Cogswell Constr. Co.,** 513 Park Ave., Baltimore, Md. CA **$1,362,400,** est. $1,250,000. brick, concrete, steel MEDICAL SURGICAL BLDG., Springfield State Hospital, SYKESVILLE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Md. CD 4/2, under LB.

SOUTH

BIDS ASKED—BUILDINGS

▲ † **Tenn., Memphis**—WAREHOUSES, etc.—B.A. 5/19—U. S. Eng., Box 97, construct 6 huge warehouses, construct roads, grading, etc. $10,000,000. CD 9/13.

HEAVY CONSTRUCTION

LOW BITS AND CONTRACTS

▲† **Wright Contg. Co.,** 504 25 Ave., Columbus, Ga., LB, **$2,254,534,** parking apron and overlays at Hunter Air Force Base, Inv. 52-42, SAVANNAH, GA. U. S. Eng., Post Office Bldg., Savannah, Ga. Bids Apr. 10. CD 3/25.

▲ **Sullivan, Long & Hagerty,** 2026 Second Ave., Bessemer, Ala. CA **$790,603,** Proj. A; CA **$1,604,038,** Proj. B. sanitary sewer imprvs., GULFPORT, MISS. City, Gulport, Miss. CD 3/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **U. S. Eng.,** foot of Frost St., Norfolk, Va., rejected bids SHOP, STORAGE, SCHOOL ADMINISTRATION facilities and BOQ headquarters, Inv. 52-15, FORT EUSTIS, VA. LB **$3,703,103.** CD 4/10, under LB.

▲ **Virginia Engineering Co.,** Melson Blvd., Newport News, Va., CA. **$6,133,000.** 752 HOUSING units, NORFOLK, VA. Norfolk Redevelopment & Housing Auth., Dickson Bldg., Norfolk, Va. Bids Mar. 18. CD 3/26, under LB.

▲ **H. K. Ferguson Co.,** 1783 E. 11 St., Cleveland, O., CA, **$1,000,000** design and construct chlorine reclamation PLANT addn., BRUNSWICK, GA. Hercules Powder Co., Brunswick, Ga. CD 3/28.

▲ **Charles E. Nash,** Macon, Ga., Owner Builds. **$1,000,-000.** RESIDENCES, MACON, GA.

▲ **H. K. Ferguson Co.,** 1783 E. 11 St., Cleveland, O., and **Duval Engr. & Constr. Co.,** 1746 E. Adams St, Jacksonville, Fla., CA, **$20,000,000.** PLANT, FOLEY, FLA. Buckeye Cellulose Corp., c/o Procter & Gamble Co., 155 E. 44 St., New York, N. Y. CD 3/11.

▲ **Whelen Constr. Co.,** Commerce Union Bank Bldg., Nashville, Tenn. CA **$1,000,000.** 128 RESIDENCES, PADUCAH, KY. Fernwood Homes, Inc., c/o contractor.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Hinsdale—SCHOOL—B.A. 5/5—School Dist. 181, Grant and 55 Sts., 1 story, 40,000 sq. ft., brick, stone glass block Oak Street School, $500,000. Fugard, Burt, Wilkinson & Orth. 520 N. Michigan St., Chicago, Zone 11, archts. CD 2/12.

SOON LETS CONTRACT—BUILDINGS

▲ **Ill., Arlington Heights**—HOME—Lutheran Home & Services for the Aged, Arlington Heights, soon lets contract, old people's home, $1,000,000. De Leuw, Cather & Co., 150 N. Wacker Dr., Chicago, Zone 6, engrs. CD 12/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., T. J. Kauer, dir., State Office Bldg., Columbus, Zone 15,

Robert J. Dienst & Son, 297 S. High St., Columbus, O., LB **$178,000,** est. $199,450. Type T-35, 7.15 mi. U.S. R. 40 (0.39-7.53) Village of New Rome, City of Columbus), Franklin Co.;

Dandrea & Nardini Constr. Co., 737 Broadway, Lorain, O., LB **$294,926,** est. $328,200, Type T-71 and structure 0.568 mi. SR 10-20.19. FG-308 (2), Lorain Co.;

D. R. Smalley & Sons, Inc., 426 W. Market St., Celina, O., LB **$1,847,438,** est. $1,943,100, Type T-71 and T-35, 5.328 mi. U.S. R. 62 (4.59-9.67), F-524 (5), Village of Hubbard, Trumbull Co.;

cancelled bids to have been opened Apr. 8, Type T-71 and structure 0.989 mi. U.S. R. 250 (21.01-21.79), F-675 (2), Tuscarawas Co. CD 3/26.

▲† **The R. C. Mahon Co.,** 6565 E. Eight Mile Rd., Detroit 34, Mich., CA. **$2,074,208,** procurement fabrication and erection of structural steel for 2 maintenance hangars, Lockbourne Air Force Base, Serial No. ENG 46-022-52-113, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Mar. 28. CD 4/1, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Castle Homes Co.,** Victor Gross, 1288 Stoner St., Akron, O., Owner Builds. **$1,400,000.** 135 HOMES, off Carnegie Ave., south of Waterloo Rd., AKRON, O.

▲ **Robert Terris, Thomas Asher & George Mossman,** Kenwood Rd., Cincinnati, O., Owner Builds. **$1,250,-000,** fifty 1½ story bsmnt., 25x50 ft. and 30x65 ft. brick DWELLINGS, CINCINNATI, O. Wilbur Firth, 7124 Montgomery Rd., Cincinnati, O., archt. Nunlist & Frolicher, Traction Bldg., Cincinnati, O. engrs.

▲ **The Arcose Co.,** 5450 Sidney Rd., Cincinnati, O., Owner Builds. **$2,500,000.** One hundred sixty seven 1½ story bsmnt. brick, DWELLINGS, 24x36 ft., and 24x30 ft., on extens. of Covedale Ave. and new streets, Morado Dr., Belvoir Lane and Limberlost Lane, CINCINNATI, O. Joseph M. Allen, 4638 Glenway Ave, Cincinnati, O., engr. and designer

H. J. Spieker Co., 1418 Elm St., Toledo, O., CA **$948,400**, general constr. 4 story CHILD STUDY INSTITUTE and JUVENILE COURT BLDG., TOLEDO, O. Lucas Co. Bldg. Comm., c/o Comrs., Court House, Toledo, O. Bids Apr. 8, awarded Apr. 9. CD 3/18.

▲ **Riley Stoker Corp.**, 122 S. Michigan Ave., Chicago, Ill. CA, **$1,000,000**, installation BOILERS and equipment for municipal light plant, RICHMOND, IND. City, City Hall, Richmond, Ind. Awarded Apr. 8. CD 4/30/51.

School District 125, Lake Zurich, Ill., rejected bids Mar. 17, High SCHOOL addns., modifications, LAKE ZURICH, ILL. LB, **$937,509**. CD 3/26, under LB.

▲ **Kuljian Corp.**, 1200 N. Broad St., Phila., Pa. CA **$7,500,000**, design and construct No. 1 POWER PLANT facilities, DEARBORN, MICH. Ford Motor Co., 3000 Schaefer St., Dearborn, Mich. CD 6/7/46.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Tex., Port Isabel**—B.A. 5/12—Cameron Co., c/o Comrs. Court, Court House, causeway between Port Isabel and lower end Padre Island. $2,000,000. Parsons, Brinckerhoff, Hall & MacDonald, Bankers Mtg. Bldg., Houston, engrs. A. Tamm, Harlingen, co. engr. CD 9/23/49.

BIDS ASKED—BUILDINGS

▲ **S. D., Sioux Falls**—SCHOOL—B.A. 4/30—Bd. Educ., 107 High School Bldg., Edison Junior High School. $1,200,000. Harold Spitznagel, 816 Natl. Bank of South Dakota Bldg., archt. CD 11/19.

▲ **Tex., Edinburg**—COURT HOUSE—B.A. 6/3—Hidalgo Co., Court House, 70,000 sq. ft. masonry court house. $1,500,000. Plans deposit $75. R. Newell Waters, Weslaco, archt. F. J. Niven, 3908 Main St., Houston, engr. CD 12/17.

▲ **Tex., Odessa**—PLANT—Bids Asked— Stanolind Oil & Gas Co., Odessa, sulfur-recovery plant unit, 15 mi. northwest of here. $1,250,000. Girdler Corp., 224 E. Broadway, Louisville, Ky., engrs. CD 4/7.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex., Laredo**—HOUSING—Federal Housing Admin., 610 S. Flores St., San Antonio, soon lets contract, 200 rental housing units. $1,500,000; 50 sales housing units, for occupancy by Laredo Air Force Base of Military and Civilian and Defense Workers. CD 4/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **KANSAS**—State Hy. Comn., Topeka,

Union Constr. Co., 1401 Fairfax Ave., Kansas City, Kan. CA **$327,778**. pavement patching, widn. sheet asph. surf. 3.995 mi. Proj. 105 S 252 (3) Wyandotte Co.; 5.014 mi. Proj. 24-105 K 1098 Wyandotte Co.;

M. W. Watson, National Bank of Topeka Bldg., Topeka, Kan. CA **$133,126**. subgrade modification single asph. surf. tr. 4.015 mi. Proj. 10-89 K 1092 (2) Shawnee Co.; 18.183 mi. Proj. 10-99 K 1094 (2) Wabaunsee Co.; 1.902 mi. Proj. 30-99 K 1095 (2) Wabaunsee Co.;

Stannard Constr. Co., 519 S. Broadway, Wichita, Kan., CA $134,855. c. conc. 1.116 mi. Proj. 24-44 F 01-6 (4) Jefferson Co.; 0.399 mi. Proj. 59-44 F 067-3 (2) Jefferson Co.;

J. A. Tobin Constr. Co., 3700 Rainbow St., Kansas City, Kan. CA **$1,132,944**. c. conc. 12.54 mi. Proj. 50-46 FI 02-3 (4) Part I, Johnson Co.; 0.183 mi. Proj. 50-46 FI 02-3 (4) Part II, Johnson Co.; 1.036 mi. Proj. 50-46 UI 02-3 (5) Part I, Johnson Co.; 0.386 mi. Proj. 50-46 UI 02-3 (5) Part II, Johnson Co.; 0.367 mi. Proj. 7-46 F 081-1 (2) Johnson Co.;

James Coffey, 230 W. 10 St., Topeka, Kan. CA **$277,793**. grading, detour 8.981 mi. Proj. 36-22 F 092-5 (1) Part I, Doniphan Co.; 0.568 mi. Proj. 36-22 F 092-5 (1) Part II, Doniphan Co.;

Blacktop Constr. Co., Emporia, Kan. CA **$708,824**. single asph. surf. tr. 5.623 mi. Proj. 99-56 K 1096 (2) Lyon Co.; 8.3 mi. Proj. 99-99 K 1097 (2) Part I and II, Wabaunsee Co.; bit. sealing 6.282 mi. Proj. 130-56-1518 (4) Lyon Co.; 3.722 mi. Proj. 50N-56-1517 (4) Lyon Co.; 14.612 mi. Proj. 50N-70-1522 ABC (4) Osage Co.;

Mission Equipment & Constr. Co., Mission, Kan. CA **$64,762**. bit. sealing 3.972 mi. Proj. 16-43-1513 (4) Jackson Co.; 3.204 mi. Proj. 9-58-1519 (4) Marshall Co.; 23.17 mi. Proj. 77-58-1520 (4) Marshall Co.; 9.775 mi. Proj. 16-75-1523 AB (4) Pottawatomie Co.; 1.67 mi. Proj. 50-46-1527 AB (4) Johnson Co.; 5.223 mi. Proj. 58-46-1528 ABC (4) Johnson Co.; sheet asph. surf. Proj. 50-46 K 1105 (2) Johnson Co.;

Roy Baker, Ozawkie, Kan. CA **$127,597**. bit. sealing 3.499 mi. Proj. 73-3-1505 (4) Atchison Co.; 3.03 mi. Proj. 74-3-1506 (4) Atchison Co.; 12.311 mi. Proj. 116-3-1507 (4) Atchison Co.; 2.498 mi. Proj. 16-43-1512 AB (4) Jackson Co.; 6.006 mi. Proj. 116-43-1514 (4) Jackson Co.; 15.384 mi. Proj. 20-22-1510 (4) Doniphan Co.; 1.56 mi. Proj. 120-22-1511 (4) Doniphan Co.; 5.136 mi. Proj. 20-7-1508 (4) Brown Co.; 10.794 mi. Proj. 7-22-1509 (4) Doniphan Co.; 23.541 mi. Proj. 4-44-1515 AB (4) Jefferson Co.; 5.122 mi. Proj. 7-3-1525 AB (4) Atchison Co.; 18.649 mi. Proj. 159-3-1526 AB (4) Atchison Co.;

Independent Constr. Co., Overland Park, Kan., CA, **$165,353**. pavement patching, sheet asph. surf. course 7.827 mi. Proj. 50-46 K 1099 (2) Part I, Johnson Co.; 0.6 mi. Proj. 50-46 K 1099 (2) Part II, Johnson Co. Grand total $2,442,448. Bids Apr. 4.

▲† **Brown & Root, Inc.**, Box 3, Houston, Tex., LB **$1,533,496** (1) 200x8,000 ft. runway; LB **$717,291** (2) 10,325 lin. ft. taxiway; LB **$88,620** (3) airfield drainage sys. addns., LB **$69,995** (4) salvaging and relocation railway spur tracks; LB **$233,145** (5) related misc. items site clearing, grading, subgrade and subbase, concrete and flexible pavement, runway-taxiway markings, drainage pipes, mulching, concrete drainage structures, Contr. NOY 71643, CORPUS CHRISTI, TEX. U. S. Govt. Officer in Charge of Construction, Naval Air Advance Training Command, Naval Air Station, Corpus Christi, Tex. Bids Apr. 9. CD 3/23.

▲ **Pasotex Pipe Line Co.**, c/o R. G. McIntyre, 3015 Chevy Chase St., Houston, Tex., Own Forces. Approx. **$3,500,000**. 195 mi. crude oil pipe line between Wink and El Paso, TEXAS. CD 4/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Universal Constr. Co.**, Scarritt Bldg., Kansas City 6, Mo. LB **$1,374,174**. SHELL ASSEMBLY UNIT, 15 supporting bldgs., etc., Eng. 23-028-52-49 and 48, Lake City Arsenal, INDEPENDENCE, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Apr. 15. CD 4/8.

▲ **Wallace E. Johnson**, 875 Rayner St., Memphis, Tenn., Owner Builds, **$1,600,000**, 200 HOUSING units, CAMDEN, ARK.

▲ **Wallace E. Johnson**, 875 Rayner St., Memphis, Tenn. Owner Builds, **$2,000,000**, 259 HOUSING units, PINE BLUFF, ARK.

▲† **Prock Constr. Co.**, Independence, Mo., CA **$2,604,930**, STOREHOUSES, at Naval Ammunition Depot, Spec. 32942, SHUMAKER, ARK. Dist. R. Wks., Eighth Naval Dist., U. S. Naval Station, Bldg. 16, New Orleans, 12, La. Bids Mar. 14. CD 2/12.

† **Maxey & Leftwich**, P.O. Box 4091, Albuquerque, N. M., LB, **$10,045,000**. Naval Ammunition DEPOT imprvs., HASTINGS, NEB. Ninth Naval Dist., Great Lakes, Ill. Bids Apr. 4. L. A. Daly Co., Insurance Bldg., Omaha, Neb., archt.

▲ **Massman Constr. Co.**, 20 W. 9 St., Kansas City, Mo. and **Patti Contr. Co.**, 1340 Admiral Blvd., Kansas City 6, Mo. CA **$17,000,000**. rehabilitate renovate BUILDINGS, new buildings, 70 mi. railroad, 105 mi. roads, DE SOTO, KAN. Sunflower Ordnance Works, c/o Col. Don. M. Hoffman, Co., DeSoto, Kan. Hercules Powder Co., will operate. Tanner & Mitchell, 310 Ward Parkway, Kansas City 2, Mo., engrs.

▲ **Missouri Valley Construction, Inc.** and **Winston Bros.**, 1932 Harrison St., Amarillo, Tex., CA, **$2,300,000**, addnl. GENERATING unit; CA **$7,000,000** 1st unit of generating plant, 50,000 kw; CA **$9,000,000**, 2nd unit of generating plant, 100,000 kw. near AMHERST, TEX. Grand total $18,300,000. Southwestern Public Service Co., 3rd at Polk St., Amarillo, Tex. CD 2/19.

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▲ **Lone Star Producing Co.**, 1915 Wood St., Dallas, Tex., Own Forces. Approx. **$3,000,000**. Gas PLANT, 10 mi. north of BRONTE, TEX. CD 3/28.

▲ **R. F. Ball Constr. Co.**, 3200 W. Dallas Ave., Houston, Tex., LB **$2,423,301**. Tex. 9-11-F, 482 HOUSING units for total 69 dwelling bldg., DALLAS, TEX. Dallas Housing Auth., 2525 Lucas Dr. Dallas, Tex., Bids Apr. 9. CD 3/25.

▲ **Southwestern Constr. Co.**, 4949 Rusk St., Houston, Tex., CA, **$2,600,000**. LABORATORY and RESEARCH CENTER, FREEPORT, TEX. Dow Chemical Co., Freeport, Tex. Bids Apr. 2. CD 4/11, under LB.

▲ **Robert C. Guyler**, Crystal City, Tex., CA **$1,097,340**. Tex. 6-31, 160 low-rental HOUSING units, SAN ANTONIO, TEX. San Antonio Housing Auth., 400 Labor St., San Antonio, Tex. Bids Mar. 11, awarded Apr. 9. CD 3/17, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Nev., Hawthorne**—B.A. On Or About 6/2—P. Wks. Office, Twelfth Naval Dist., San Bruno, Calif., rehabilitation certain roads and railroads at Naval Ammunition Depot. $2,000,000.

BIDS ASKED—BUILDINGS

▲ **Calif., Berkeley**—HOME ECONOMICS—B.A. 5/13—University of California, 221 Administration Bldg., home economics bldg. Hilgard Field. Plans deposit $50. Spencer & Ambrose, 251 Kearny St., San Francisco, archts. CD 9/25/47.

▲ **Wash., Monroe**—CELL BLOCK—B.A. 5/14—State Dpt. Pub. Institutions, Olympia, 3 story, 43x271 ft. rein-con. cell block addn. at state reformatory, $1,750,000. Plans deposit $50. Naramore, Bain & Brady & Johanson, 904 7 Ave., Seattle, archts. CD 9/20.

▲ **Ariz., Yuma**—SCHOOL—B.A. 5/19—Yuma Union High School Dist., Yuma, 2 story, rein.-con. Yuma High School addns. $1,200,000. Plans deposit $40. Bowen, Rule & Bowen, and Frederick L. Clock, 2835 Gilroy St., Los Angeles, Calif., archts. CD 1/8.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † **J. A. Jones Constr. Co.**, 1117 2 St., Seattle Wash. and **Charles H. Tompkins**, 907 16th St. N.W. Wash., D. C., LB, **$28,783,628**, Palisades Dam and Power Plant, LB, **$396,718** relocation roads, Payette River near Idaho Falls, Spec. DC 3675, IDAHO. Bureau Reclamation Dpt. Interior, Idaho Falls, Idaho. Bids Apr. 10. CD 3/21.

▲† **Cherf Bros. Constr. Co. and Sandkay Contractors**, Ephrata, Wash., LB, **$954,145**, (1);

Otis Williams & Co., Helena, Mont., LB, **$629,579** (2); LB, **$439,699** (3), earthwork, pipe lines, structures for Area E-4 laterals and sublaterals and county road relocation, East Low Canal laterals, Columbia Basin Proj. Spec. DC 3670, WASHINGTON. Bureau Reclamation Dpt. Interior, Ephrata, Wash. Bids Apr. 8. CD 3/26.

CALIFORNIA—State Div. Hys., P. Wks. Bldg., Sacramento,

Transocean Engineering Corp., 18580 Hesperion Blvd., San Lorenzo, Calif., LB, **$117,771**, rein.-con. box girder bridge and road mix surf., apply seal coat to 0.21 mi. approaches across Indian Creek 5 mi. NW of Boonville, Mendocino Co.;

Gordon H. Ball, San Ramon Valley Land Co., Trewhitt, Shields & Fisher, Star Route, Danville, Calif., LB, **$857,980** 6 overcrossings, portions of roadway for divided hy., connection roads, frontage roads, approach ramps, etc. Tulare Airport and Tagus, Tulare Co. Bids Apr. 9. CD 3/19.

▲† **ABC Constr. Co., R. J. Daum**, 6803 West Blvd., Inglewood, Calif., LB, **$2,184,420**, Sch. 4;

Ventura Pipeline Constr. Co., Ventura, Calif., LB **$232,208**, Sch. 1, concrete pipe lines, structures, South Coast Conduit Carpenteria Section Cachuma Proj., Spec. DC 3666, CALIFORNIA. Bureau Reclamation Dpt. Interior, Goleta, Calif. Bids Apr. 9. CD 3/19.

▲ **Metropolitan Water District of Southern California**, 306 W. 3 St., Los Angeles, Calif., rejected bids Apr. 2, Garvey-Ascot Cross Feeder, Alhambra, LOS ANGELES, CALIF. LB **$2,177,221**. CD 4/9, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **MacDonald-Woodworth-Wright**, 1517 S. Tacoma Way, Tacoma, Wash., CA, **$9,368,994**, 40 BARRACKS bldgs. in permanent troop facilities area, Inv. 52-130, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 28, awarded Apr. 8. CD 3/4, under LB.

† **Bennett—Campbell, Inc.**, Seaboard Bldg., Seattle, Wash., CA, **$999,000**, est. $850,000. 3 story, 8,500 sq. ft., rein.-con. U. S. Public HEALTH SERVICE HOSPITAL addns., Proj. 45-066, SEATTLE, WASH. General Services Admin., P. Bldgs. Service General Services Bldg. 19 and F Sts. N.W., Wash., 25, D. C. Bids Feb. 21. CD 2/28, under LB.

▲ **Strand & Sons**, 3939 University Way, Seattle 5, Wash., CA, **$1,388,900**, general contract 10 story, bsmnt., rein.-con. mens DORMITORY, SEATTLE,

WASH. University of Washington, Seattle 4, Wash. Bids Apr. 1. CD 4/7, under LB.

Thornburn & Logozo, 4608 36 Ave. S.W., Seattle, Wash., LB, **$980,022,** 36 HOUSES, commissary bldg. and installation of facilities at Diablo, SEATTLE, WASH. Bd. of Pub. Wks., 612 County-City Bldg., Seattle 4, Wash. Bids Apr. 9. CD 3/13.

▲ **Ross B. Hammond Co.,** Box 3901, Portland, Ore., LB **$1,669,626,** 4 story, rein.-con. HOSPITAL wing, PORTLAND, ORE., Emanuel Hospital, 2800 N. Commercial St., Portland, Ore. Bids Apr. 2. CD 3/19.

▲ **Albert Reingardt,** 3825 E. 7 St., Long Beach Calif., CA, **$1,388,000,** Paramount High SCHOOL, COMPTON, CALIF. Compton Union High School Districts, 601 S. Acacia St., Compton, Calif. Bids Apr. 4. CD 4/15, under LB.

Property Management, 15502 S. Crenshaw Blvd., Gardena, Calif. Owner Builds, **$562,500,** 75 frame, stucco DWELLINGS in Tract 14854, GARDENA, CALIF. Frank Cameniti, c/o owner, archt.

▲ **James I. Barnes Constr. Co.,** 1119 Montana Ave., Santa Monica, Calif., CA, **$2,088,000,** general contract, Juvenile HALL, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Apr. 1, awarded Apr. 8. CD 4/8, under LB.

▲ **Nomellini Constr. Co.,** P. O. Box 1177, Stockton, Calif., CA, **$1,384,000,** general contract;

E. C. Braun Co., 2115 4 St., Berkeley, Calif., CA, **$572,353,** mechanical work for ADMINISTRATION, RECEIVING and TREATMONT BLDG., Mendocino State Hospital, TALMAGE, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Mar. 25. CD 4/1, under LB.

▲ **J. A. McNeil Co.,** 3115 W. Mission Rd., Alhambra, Calif., CA, **$1,004,500,** 4 masonry ORPHANAGE bldgs., WILMAR, CALIF. Daughters of Charity of St. Vincent De Paul, 917 S. Boyle St., Los Angeles, Calif. Beatty & Clar, 1121 S. Hell St., Los Angeles, Calif., engrs.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Peter Kiewit Sons Co.,** Longview, Wash., LB **$542,130.** est. $574,065, 1 story, bsmnt., 80-175 ft. rein.-con., masonry commissary, Ladd Air Force Base, ENG 95-507-52-30, ALASKA, U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids Apr. 8. CD 3/10.

CANADA

BIDS ASKED—BUILDINGS

Que., St. Laurent—SCHOOL—B.A. 4/29—Z. O. Appleby, secy. Protestant Board School Trustees, St. Laurent high school addns., alterations. $600,000. S. & C. S. Comber, 4444 Sherbrooke St. W., Montreal, Que., archts. CD 1/28.

▲ **Ont., Prescott**—FACTORY—B.A. 5/12—RCA-Victor Co., Ltd., 1001 Lenoir St., Montreal, Que., 1 story, 200x520 ft., bsmnt., L-shaped, rein.-con. factory with office on roof, $1,000,000. Nenniger & Chenevert, 1440 St. Catherine St. W., Montreal, Que., surveyors. CD 6/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Marine Industries Ltd.,** Sorel, Que., CA. **$13,000,000.** dredging, straightening, imprv. ship channel St .Lawrence River, between Montreal, Que. and Quebec City, for 5 year period, QUEBEC, Dpt. Transport, Ottawa, Ont. F. Jones, c/o owner, engr.

▲ **Anderson International Contractors, Inc.,** Edmonton, Alta., CA, **$5,500,000,** 100 mi. pipe line Regina Sask. to Gretna, Man., SASKATCHEWAN and MANITOBA. Imperial Pipe Line Co. Ltd., Alexandra Bldg., Edmonton, Alta. Awarded Apr. 8. CD 4/9, under CA.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Brookfield Constr. Co. Ltd.,** 169 Hollis St., Halifax, N. S. CA, **$2,605,765,** 2 and 3 story apartment blocks, HOUSING, at military base, HALIFAX, N. S. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S. Awarded Apr. 12.

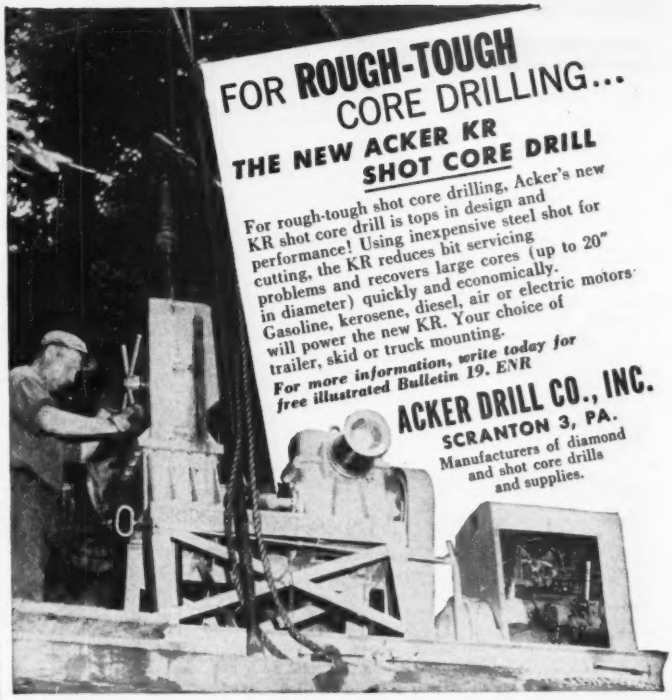
W. Morganstern, c/o Toronto Floor & Wall Tile Distributors, 751 Bathurst St., Toronto, Ont., Owner Builds, **$800,000,** 10 two story, 44x82 ft., APARTMENT HOUSES, incl. 10 apartments each, Maurice Dr. and Trafalgar Park, OAKVILLE, ONT.

▲ **Born Constr. Co.,** 186 Owen Blvd. York Mills, Toronto, Ont., Owner Builds, **$1,000,000,** three 35-suite 3 story, 100x345 ft., concrete, brick APARTMENT BLOCKS, Eglinton Ave. E., TORONTO, ONT. Venchiarutti, 1170 Bay St., Toronto, Ont., archts.

Thos. Cochren Constr. Ltd., Charlotte and Montrose Sts. Hamilton, Ont., Owner Builds, **$800,000,** 90 HOMES at Green Point Survey, HAMILTON, Ont.

Leon M. Adler, 75 Manseau Ave., Montreal, Que., CA **$800,000** 20 APARTMENT bldgs. incl. 12 apartments each, Metropolitan Blvd., St. Laurent, MONTREAL, QUE. Maxwell Cummings & Sons, 1390 Sherbrooke St. W., Montreal, Que.

(Proposal Advertisements see pp. 129 to 131)



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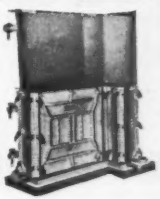

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Chelsea**—STEAM and RETURN LINES—B.A. 4/30—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, continuation steam and return lines from Bldg. 91 to Manhole, Bldg. 35, Chelsea Naval Hospital, NOY 29563, Spec. 31231. Plans deposit $10.

Mass., Worcester—B.A. 5/2—City, City Mgr's Office, City Hall, Contr. 3 sewage pumping station, $250,000; Contr. 4 24 in. force main, 30 in. gravity sewer, $85,000. Plans deposit Contr. 3 $25, Contr. 4 $10. Camp, Dresser & McKee, 6 Beacon St., Boston, engrs. CD 11/9.

† **Connecticut**—B.A. About 5/13—U. S. Eng., 857 Commonwealth Ave., Boston, 15, Mass., clearing for Mansfield Hollow Reservoir, Natchaug River, CIVENG 19016-52-35. CD 3/22/45.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Ellis C. Snodgrass, Inc.**, 465 Congress St., Portland, Me. CA Approx. **$12,700,000.** power project on Upper Kennebec River, Indian Pond and The Forks, MAINE. Central Maine Power Co., 9 Green St., Augusta, Me.

† **Bridge Constr. Co.**, 341 Water St., Augusta, Me. LB **$666,925.** runway exten., Taxiway "M", Presque Isle Air Force Base, Eng. 19-016-52-29, PRESQUE ISLE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 8. CD 4/2.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Daniel O'Connell's Sons, Inc., 840 Hampden St., Holyoke, Mass. CA **$1,776,699**, est. $1,850,000. Bridge substructure over Connecticut River, Chicopee and West Springfield. Bids Mar. 25, awarded Apr. 10. CD 3/31, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

V. Barletta Co., 10 Whipple Ave., Roslindale, Mass. LB **$3,647,578**, est. $3,000,000. Contrs. D-1 and H-1, superstructure, surf. roads, approaches, J. F. Fitzgerald Expressway, Haymarket Square to Oliver St., Boston, Bids Apr. 8. CD 3/12.

▲ **Associated Constr. Co.**, 1010 Wethersfield Ave., Hartford, Conn. CA, **$1,374,800**, Contract E-52-101, refuse incinerator North Meadows near Connecticut River, HARTFORD, CONN. CITY, Purch. & Contg., 550 Main St., Hartford, Conn. Bids Apr. 1, awarded Apr. 7. CD 4/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

T. W. Cunningham, Inc., 38 Columbia St., Bangor, Me. LB **$563,700.** Female DORMITORY, WATERBURY, VT. State, State Bdg. Council, State Office Bldg., Montpelier, Vt. Bids April 8. CD 3/18.

George B. H. Macomber Co., 19 Milk St., Boston, Mass. CA **$300,000.** 1 story, bsmnt., 70x170 ft., SALES and SERVICE BLDG., Commonwealth Ave., BOSTON, MASS. Packard Motor Car Co., 1081 Commonwealth Ave., Boston, Mass. H. E. Davidson & Son, 66 Beacon St., Boston, Mass., archts.

▲ **St. Paul Constr. Co.**, 603 Boylston St., Boston, Mass. LB **$2,900,000.** 295 HOUSING units, N-44 Sec. 2 Proj. 023-8006, U. S. Naval Air Facility, South Weymouth, WEYMOUTH, MASS. First Naval Dist., 495 Summer St., Boston, Mass. Richmond & Goldberg, 16 Arlington St., Boston, Mass., archts. Bids Apr. 11. CD 3/20.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. Y., New York—B.A. 4/29—Bd. Water Supply, 120 Wall St. Contr. 326, furnishing, del. installing, testing, plumbing equip. and appurtenances for Rondout, West Branch and Kensico South effluent chambers, the drainage chambers at Shafts 6, 13 and 23, the coagulating plant at Shaft 17 and Kensico comfort stations of the Delaware Aqueduct, and for appurtenant misc. constr. in towns of Wawarsing, Ulster Co., Wappinger, Dutchess Co., Carmel, Putnam Co., and Bedford, North Castle, Mount Pleasant and Yonkers, Westchester Co. CD 6/16/44.

BIDS ASKED—BUILDINGS

N. Y., Laurelton—LIBRARY—B.A. 4/30—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting fixtures for construction of Laureiton Branch Library, 134-26 225 St., Queens Boro, for the Queens Borough Public Library. Plans deposit $25.

† **N. J., Fort Dix**—MESS—B.A. About 5/15—U. S. Eng., 121 N. Broad St., Phila. 1, Pa., construction of officers' mess, Inv. Eng 36-109-52-301.

▲† **Pa., Tobyhanna**—BUILDINGS, UTILITIES, etc.—B.A. On Or About 5/23—U. S. Eng., 121 N. Broad St., Phila., Zone 1,(A) (1) 3 story, 230,000 sq. ft. admin. bldg. (2) 2 units 1 story, 200x1,200 ft. general purpose warehouse; (4) 1 story, 400x500 base maintenance shop, 200x1,200 ft. Class "C" storage wing, 200x1,200 operations wing; (5) 1 story 221x285 ft. refrigerated storage bldg. (6) 1 story, 135x200 ft. box factory, 218x200 ft. open warehouse, 53x200 ft. cable processing bldg. (7) 1 story, 37x51 ft. guard control bldg. (8) 1 story, 58x162 ft. motor pool admin. and vehicular storage bldg. with gasoline station, (9) 1 story, 134x165 ft. with 61x66 ft. wing, concrete office, repair shop (10) 1 story, 44x222 ft. material handling equip. shed; (11) 15,000 gal. capacity diesel oil station (12) 1 story, 100x200 ft. inflammable storage bldg. (13) Utility Yard Bldgs., 24x24 ft. inflammable storage, 30x77 ft. admin. bldg., 32x165 ft. shop, 26x161 ft. supply warehouse, 26x145 ft. storage shed, foregoing 1 story each (14) 1 story, 50x132 sq. ft. fire station (3-stall) (15) 7,068 sq. ft. boiler plant, 4 steam generating units, (16) 1 story, 150x243 ft. vehicular processing bldg., 2 40x283 ft. platforms, (17) 28x32 ft. incinerator, (18) 1 story 26x93 ft. salvage bldg., (B) utilities, incl. (1) elec. distr., street lighting sys., (2) fence lighting, (3) sanitary sewer, (4) sewage disposal plant, (5) water supply wells, reservoir tanks, (6) water supply distr. sys. (7) steam distr. sys. (C) site imprvs. Inv. No. Eng 36-109-52-325. Plans deposit $225. CD 2/9/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

The Interstate Amesite Co., 265 Delaware Trust Bldg., Wilmington, Del., CA. **$643,214,** widening 39,700 ft. roadway with crushed aggregate base and bit. surf. new and existing base, T. R. U. S. 19, Butler Co.;

L. R. Owen Co., R. D. 2, Johnstown, Pa., CA **$859,735,** widening 35,020 ft. roadway with plain c. conc. base and bit. surf. new base and existing pavement, T. R. 219, Clearfield Co. Bids Mar. 28. CD 4/1, under LB.

Paul L. Britton, Linesville, Pa., LB **$257,510,** Sect. 1, water filtration plant, clear water reservoir and pipe lines;

Joseph F. Triana, Ackerman Lane, North East, Pa. LB **$50,258**, Sect. 2, water mains extens.;

Keystone Constr. Co., 90 Race St., Meadville, Pa., LB **$99,800,** Sect. 3, addns., imprvs. sewage treatment plant. UNION CITY, PA. Union City Boro Auth., Union City, Pa. Bids Mar. 6. CD 2/7.

BUILDINGS

LOW BIDS AND CONTRACTS

Wilson Constr. Co., Inc., Johnstown, Pa., CA. Approx. **$446,590,** 2 story, 185x206 ft. and 123x165 ft., brick, concrete Joint HIGH SCHOOL, CLEARFIELD, PA. for Harmony Joint School Dist., Clearfield, Pa. State School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Mar. 27. CD 3/7.

United Constr. Co., 1204 Lincoln Ave., Pittsburgh, Pa., LB **$324,500.** 5 story, 115x139 ft., brick, block, College Hill APARTMENTS, BEAVER FALLS, PA. Beaver Co. Housing Auth., Box 181, Beaver, Pa. Bids Mar. 31. CD 3/6.

Didion Bros., Lytle Rd., R. D. 1, Library, Pa., LB Approx. **$300,000.** 2 story, bsmnt., 54x97 ft., brick, block, stone, steel, parochial SCHOOL, at Bethel Boro, LIBRARY, PA. St. Valentine Roman Catholic Congregation, R. D. 1, Library, Pa. CD 8/2.

Byrum Constr. Co., 12 and Water Sts., Wheeling, W. Va., LB Approx. **$365,226,** 1 story, 125x325 ft., T-shaped brick Consolidated Grade School, NORTH FRANKLIN TWP., PA. for School Dist. of North Franklin Twp., Washington, Pa. State School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Apr. 3. CD 3/27.

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh, Pa., CA. Approx. **$9,150,000** BLAST FURNACE, COKE and CHEMICAL PLANT, 35 coke ovens, coal handling, stack house, boiler and cast shop, Neville Island, PITTSBURGH, PA. Pittsburgh Coke & Chemical Co., Grand Bldg., Pittsburgh, Pa. CD 7/5, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **N. C., Fayetteville**—B.A. About 5/14—U. S. Eng., 308 Customhouse, Wilmington, bit. surf. tr. streets in Honeycutt Pl., near here, Serial No. Eng. 31-075-52-24.

BIDS ASKED—BUILDINGS

† **Fla., Camp Blanding**—TELEPHONE, etc.—B.A. 5/2—U. S. Eng., P. O. Box 4970, Jacksonville, telephone and telegraph bldgs., Eng 08-123-52-142. Bid date changed. CD 4/9.

▲† **Ala., Anniston**—IGLOO MAGAZINES—B.A. 5/15—U. S. Eng. P.O. Box 1169, Mobile, Zone 7, moulded concrete igloo magazines at Anniston Ordnance Depot. Eng. 01-076-52-70. Plans deposit $15. Bid date changed. CD 1/25.

† **Ala., Anniston**—WAREHOUSES—B.A. 5/15—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, four warehouses at Anniston Ordnance Depot, Eng 01-076-52-69. Plans deposit $30. CD 10/26.

N. C., Greensboro—LIBRARY—B.A. 5/15—Agricultural & Technical College, Dr. F. D. Bluford, pres., Greensboro, library. Plans deposit $50 general constr., $25 each mechanical. McMinn & Norfleet, Greensboro, N. C., archts. CD 1/4/50.

Va., Charlottesville—HOSPITAL—B.A. 5/15—Martha Jefferson Hospital, Charlottesville, hospital addn. and renovation of old bldg. $800,000. CD 1/29.

▲ **Tenn., Nashville**—HEATING PLANT—B.A. After 5/15—State Bldg. Comm., State Capitol, central heating plant for State Capitol and other bldgs., $1,200,000. Hart & McBryde, 2419 West End Ave., Nashville, archts. CD 4/3/50.

SOON LETS CONTRACT—BUILDINGS

▲ **Fla., Miami**—MAINTENANCE—Eastern Airlines, Inc., c/o L. B. Taylor, engr., Dupont Bldg., soon lets contract maintenance bldg. at 36th Street Airport, $3,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comm., Raleigh,

Rea Constr. Co., Box 2015, Charlotte, N. C., CA. **$1,555,226,** est. $400,000-$500,000. grading, subgrade reinf. traffic bound macad. and concrete pavement 12.98 mi. Proj. 5256, Davidson Co. Bids Mar. 25, awaroed Apr. 8. CD 3/28, under LB.

▲ **Birmingham Building Co.**, 909 7th Ave., S., Birmingham, Ala., CA. **$2,284,832,** natural gas transmission lines and distr. lines in NEWBERRY and CLINTON, S. C. Clinton-Newberry Natural Gas Auth., Newberry, S. C. Bids Mar. 18. CD 3/27 under LB.

▲ † **Southern Constr. Co.**, Daniel Field, Augusta, Ga., CA **$1,299,497,** 5 dormitories, 2 mess and admin. bldgs., Shaw Air Force Base, Inv. 52-27, SUMTER, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids Mar. 6. CD 3/11, under LB.

GEORGIA—State Hy. Dpt., Atlanta,

Scott Constr. Co., Inc., Thomasville, Ga., CA,**$609,663** widn., resurf. present pavement and 2 new bridges 7.78 mi. Alma-Baxley Road, State Rt. 4, F 002-1 (2) and F-038-1 (1), Bacon and Appling Counties. Bids Mar. 28. CD 4/2, under LB.

▲ **American Bridge Division of U. S. Steel Co.**, P. O. Box 1033, Atlanta, Ga., CA, **$1,300,000,** fabrication, erection structural steel for flight line hangar, MARIETTA, GA. Lockheed Aircraft Corp., Marietta, Ga.

▲ **PRICE BROS. CO.**, 1932 E. Monument Ave., Dayton, O. LB, **$1,094,509,** Contract W 17, mfg. and supplying rein.-con. water pipe, MIAMI, FLA. Water & Sewer Bd., 3342 Dinnery Key Dr., Miami, Fla. Bids Apr. 3. CD 3/20.

† **Lander Constr. Co.**, Box 472, Waxahachie, Tex. LB **$438,000.** clearing Morganza Floodway, Inv. 52-171, Pointe Coupee Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids Apr. 2. CD 3/7.

▲ **Farnsworth & Chambers Co., Inc.**, P. O. Box 74, Houston, Tex. LB **$3,636,083.** WW imprvs., LOCKPORT, LA. Lafourche Parish Water Dist. 1, Lockport, La. Bids Apr. 3. CD 3/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Graham Bros.**, Southern States Bldg., Richmond Va. CA. **$2,452,400,** Cradock HIGH SCHOOL, PORTSMOUTH, VA. Norfolk Co., Bd. Educ., Norfolk, Va. Bids Mar. 27. CD 4/9, under LB.

▲ **Baker & Coombs, Inc.**, 319 Demain Ave., Morgantown, W. Va., CA, **$2,500,000** coal tipple and processing PLANT, MOUNDSVILLE, W. VA. Freeport Coal Co., 295 High St., Morgantown, W. Va. CD 12/14.

▲ **Knox Corp.**, Thomson, Ga., CA, **$1,000,000,** 200 HOUSING units, AUGUSTA, GA. Southern Finance Corp., 753 Broad St., Augusta, Ga.

Momar Constr. Co. 1514 S. W. 3 Ave., Miami, Fla., CA **$350,000,** 35 RESIDENCES, MIAMI, FLA. Barby Homes, c/o contractor.

Fleeman Builders, 721 N. W. 21 Court, Miami, Fla., CA **$400,000.** RESIDENCES, MIAMI BEACH, FLA. Miami Shores Homes, c/o contractor.

Yale Constr. Co., 1133 S. W. 27 Ave., Miami, Fla., CA, **$300,000** APARTMENT DEVELOPMENTS, MIAMI BEACH, FLA. H. Strachman, c/o contractor.

Beatty & Coogan, 211 N. E. 4 Ave., Hialeah, Fla., CA, **$300,000,** RESIDENCES, MIAMI BEACH, FLA. Beach Park Corp., c/o contractor.

Arkin Constr. Co., 1827 Purdy Ave., Miami Beach, Fla., CA, **$300,000,** APARTMENT UNITS, MIAMI BEACH, FLA. Mr. and Mrs. Abraham Busch, c/o contractor.

Clearwater Constr. Co., Clearwater, Fla., CA, **$300,000,** CHURCH, FT. MYERS, FLA. First Methodist Church, Ft. Myers, Fla. CD 10/18.

▲ **Folmar & Flinn**, 10 W. Patton Ave., Montgomery, Ala., Owner Builds, **$3,000,000.** 700 RESIDENCES, MONTGOMERY, ALA.

▲ **M. T. Reed Constr. Co.**, Belzoni, Miss. Owner Builds. **$1,000,000.** mfg. PLANT, PASCAGOULA, MISS.

Gentilly Hombes, Box 8173, New Orleans, La. Owner Builds. **$400,000.** 43 RESIDENCES, various streets, NEW ORLEANS, LA.

▲ **R. P. Farnsworth & Co.**, 1515 S. Salcedo St., New Orleans, La. CA **$2,918,000.** Medical SCHOOL addn., NEW ORLEANS, LA. Louisiana State University, School of Medicine, 1542 Tulane Ave., New Orleans, La. CD 4/9, under LB.

Geo. H. Rommell Co., Logan St., Louisville, Ky. CA, **$441,000.** rein.-con., brick WAREHOUSE, Fifth and Bloom Sts., LOUISVILLE, KY. Standard Oil of Kentucky, Fifth and Bloom Sts., Louisville, Ky. Bids April 8. CD 3/21.

▲ **N. H. Barker Co.**, 1529 Demonbreun St., Nashville, Tenn. CA. Approx. **$1,500,000.** 178 HOUSING unit, CLARKSVILLE, TENN. Guaranty Mortgage Co., c/o contractor. CD 10/17/49.

Harmon Constr. Co., 100 S. Indiana St., Oklahoma City, Okla., CA. **$582,319,** brick, steel EDUCATIONAL Bldg., concrete fdn., MEMPHIS, TENN. Linden Ave.

(Continued on page 146)

Here's a unit that's a whiz on dirt and gravel. It's a world beater, too, for cutting dangerous hard-packed snow or ice. Truth is

the FWD "Maintainer" sees action year 'round

Sand the "Maintainer" out to scrape dangerous ice and snow. Get the job done fast. Ideal, too, for early spring grading.

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Yes, "Maintainers" are always on the go, keeping roads in up-to-the-minute driving condition. The truck and blade do a complete job, smoothing out washboard roads, covering holes, cutting ice — making roads safe and comfortable. Travels fast from job to job. You get far more service than from other types of road maintenance equipment. Save tax dollars, too. Get the facts from your FWD distributor or THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis., and Kitchener, Ontario.

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You buy more than a truck when you buy an FWD Maintainer

Extra-traction and proper distribution of weight and power give you:

- Ability to work more days per year
- Multi-purpose performance — does over 60 different jobs
- Maintains at speeds up to 12 m.p.h. Feathers up to 18 m.p.h.
- Over-the-highway speed up to 42 m.p.h.
- Safe, easy travel off the highway
- Economies that mean more miles of finished road per tax dollar

World-Wide Sales and Service

(Continued from page 144)

Christian Church, 125 Linden St., Memphis, Tenn. Bids Apr. 5. CD 3/19.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Illinois—B.A. About 5/6—U. S. Eng., 834 U. S. Court House & Custom House, St. Louis, 1, Mo., placing topsoil on levee, Wood River Drainage and Levee District Item IF (3) Madison Co., CIVENG 23-065-52-78. Bids Dec. 13 rejected. CD 11/21.

† **Wis., Madison**—REFUELING FACILITIES—B.A. 5/10—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, constr. hydrant refueling facilities at Truax Air Force Base, Serial No. ENG 47-013-52-15. CD 6/27.

BIDS ASKED—BUILDINGS

Mich., Flint—SCHOOL—B.A. 4/29—City, S. S. Stewart Jr., chn. Bd. Educ., 2 story, bsmnt., brick, steel Northern High School, $850,000, Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, archts. CD 12/31.

Mich., Alpena—HOUSING—B.A. 5/5—Alpena Housing Comn., Albert Fowler, pres., 13 structures, 48 dwelling units, Cavanaugh and 11 Sts., Proj. Mich. 22-1, $300,000, Scott & Brysselbout, 1003 Washington St., Bay City, archts.

Wis., Appleton—SCHOOL—B.A. 5/5—Bd. Educ., 120 E. Harris St., 2 story, 238x224x246 ft., U-shaped Lincoln School, $925,000. Plans deposit $50. R. N. LeVee & Assoc., 203 E. College Ave., archts. CD 9/12.

Wis., Rhinelander—SHOP, etc.—B.A. 5/6—Oneida Co., 1 story, 90x180 ft. and 120x132 ft., highway shop and garage, $250,000. Plans deposit $10. Genisot Eng. Co., Inc., 1512 Eagle St., engr. CD 9/19.

Wis., Madison—Y.M.C.A.—B.A. 5/15—Young Mens Christian Assn., University of Wisconsin, 740 Langdon St., 5 story part bsmnt., 149x150 ft., concrete, steel brick Y.M.C.A., $268,836. Plans deposit $25. Weller & Strang, 114 N. Carroll St., archt. CD 3/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Mosser Constr. Inc., 122 S. Wilson Ave., Fremont, O., CA. $745,689, est. $805,000, sewage treatment plant, MARION, O. City, City Hall, Marion, O. Bids Mar. 21, awarded Apr. 2. Floyd G. Brown & Assoc., Box 27, Marion, O., engrs. CD 11/13.

ILLINOIS—State Div. Hys., Springfield,
McCalman Constr. Co., 619 Secton St., Danville, Ill., CA, $536,629, c. conc. 4.91 mi. Ill. No. 1 and U. S. 150. Edgar Co. Bids Apr 1, awarded Apr 9. CD 4/4, under LB.

▲ **WISCONSIN**—State Hy. Comn., Madison,
Rein & Schultz, Inc., 119 E. Washington Ave., Madison, Wis., LB, $374,116, Contract 1, b. conc. 10.14 mi. East County Line-Tomah Road, T 07-3 (10) Opita A, U. S. Hy. 12, Monroe Co.; Option LB $382,400, Contract 1, b. conc. 10.75 mi. the Tomah-North County Line Road, Proj.T06-3 (11) Option B, U. S. Hy. 12, Monroe Co.;
Frank Mashuda Co., 5556 W. Roosevelt Dr., Milwaukee, Wis., LB, $468,650, Contract 1, grading, structure 6.966 mi. The Hager City-U. S. H. 10 road, U. S. Hy. 63 F 028-1 (31) Pierce Co.;
Reliance Constr. Co., 1011 S. 8th St., Sheboygan, Wis., LB, $116,314, Contract 1, c. conc. 0.684 mi. South Madison Street, City of Waupun—U. S. Hy. 151, Proj. U-3722 (1), Dodge Co.
N. M. Isabella, Inc., 714 Market Pl., Madison, Wis., LB, $736,356. Contract 1, c. conc. 12.164 mi. Fennimore Boscobel Road, U. S. 16, 18 and 61, Proj. F 08-1 (18) Grant Co.;
The White Constr. Co., 710 N. Plankinton St., Milwaukee, Wis., LB, $171,566, Contract 1, b. conc. 5.295 mi. U.SH. 45 USH 41 Road, S. T. Hy. 43, Proj. T 0469 (4) Kenosha Co.
J. P. Humphries, 1226 W. Wisconsin St., Milwaukee, Wis., LB, $99,740, Contract 1, b. conc. 5.97 mi. S. T. H. 164 Menomonee Falls Road, S. T. Hy. 74, Proj. T 0168 (2) Waukesha Co.;
Mathy & Thornton Constr. Companies, 508 Hoeschler Bldg., La Crosse, Wis., LB, $725,616, Contract 1, b. conc. 20.98 mi. the East County Line-Tomah Road and Tomah-North County Line Road, U. S. Hy. 12 T 06-3 (10) and T 06-3 (11), Opiton C, combination Opitons A and B, Monroe Co. Bids Apr. 8. CD 3/19.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dahl & Stedman Co.**, 7 S. Dearborn St., Chicago 3, Ill., CA, $6,000,000, Dial EXCHANGE EXPANSION addn., 7557 Eggleston St., CHICAGO, ILL. Illinois Bell Telephone Co., 206 W. Washington St., Chicago 6, Ill. Holabird, Root & Burgee, 180 N. Wabash St., Chicago 1, Ill., archts. Awarded Mar. 6.

▲ **Sherman Olsen Co.**, 600 W. Jackson Blvd., Chicago 6, Ill., CA, $1,750,000, 1 story, 134,000 sq. ft., FACTORY addn., CICERO, ILL. Goss Printing Press Co., 1535 S. Paulina St., Chicago, Ill. Neiler, Rich & Blanden, 431 S. Dearborn St., Chicago 5, Ill., engrs. Olsen & Urbain, 5 S. Wabah St., Chicago 3, Ill., archts. Awarded Apr. 7.

Hunt Constr. Co., 2503 College Ave., Mt. Vernon, Ill., CA, $437,000, East Side Elementary SCHOOL, RANTOUL, ILL. School Dist. 137, Rantoul, Ill. D. C. Wilson, 110 Main St., Mt. Vernon, Ill., archts. Awarded Apr. 1.

Jeffress-Dyer, Inc., 208 20 St. N. W., Wash., D. C. CA $969,000. 2 story, bsmnt. Cooley Memorial RESEARCH BLDG., ANN ARBOR, MICH. Bd. Regents, University of Michigan, W. K. Pierpont, vice pres., Ann Arbor, Mich. Bids Mar. 19. CD 2/26.

Palmer-Smith Co., 415 Brainard St., Detroit, Mich., CA $400,000. 2 story, bsmnt., brick, concrete William Nowlin Elementary SCHOOL, Penn Ave., DEARBORN, MICH. City, Bd. Educ., Dearborn, Mich. Bids Mar. 26. CD 3/13.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colorado and Kansas**—B.A. 5/6—Bureau Reclamation, Dpt. Interior, Box 737, McCook, Neb., construct miscellaneous protective works and river control section for Bonny Dam, Republican River, Missouri Valley Project, Spec. 701C-247. CD 5/25/44, under Kansas.

† **Nebraska**—B.A. 5/6—Bureau Reclamation, Dpt. Interior, McCook, earthwork and structures for Cortland Canal Wasteway Channel and relocation of Drain 2A, Bostwick Div. Spec. 701C-246. CD 5/25/44.

† **Oklahoma**—B.A. 5/6—U. S. Eng., Box 61, Tulsa 2, Okla., floating bulkhead, Fort Gibson Dam, Inv. No. CIVENG 34-066-52-77. Approx. $200,000.

BIDS ASKED—BUILDINGS

Tex., Bryan—HOUSING—B.A. 4/30—Bryan Housing Auth., Bryan, 90 units low-cost housing units. $655,000. Plans deposit $35. Wm. E. Nash, Box 41, archt. CD 3/25.

Tex., Santa Anna—SCHOOL—B.A. 5/9—Santa Anna Independent School Dist., Santa Anna, masonry school, $300,000. Plans deposit $45. Don W. Smith, Texas Bank Bldg., Sweetwater, archt.

† **S. D., White Horse**—SCHOOL—B.A. 5/21—Bureau Reclamation, Dpt. Interior, Interior Bldg., 19 and C Sts. N.W., Wash. 25, D. C., construct 2 classroom school, bus garage and outside utilities, under the Cheyenne River Indian Agency.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, Tex. Own Forces. $217,000, laying storm protective underground telephone lines between Denison, Sherman, Luella and Bells Junction, TEXAS. CD 3/19.
Jack Jones Assoc., c/o Main Mortgage Co., 3008 Carolina St., Houston, Tex., Own Forces. Approx. $60,000. addnl. street constn. and asph. paving, CHANNELVIEW, TEX. CD 2-28.
Uvalde Constr. Co., Hilline Dr. and Industrial Rd., Dallas, Tex., LB $104,033, concrete type low-water bridge and asph. paving portion Lancaster-Hutchins Rd., DALLAS, TEX. Dallas County Road Dist. 1, Court House, Dallas, Tex. Bids Apr. 3. Koch & Fowler. 3900 Lemmon St., Dallas, Tex., engrs. CD 1/27/50.
Lone Star Gas Co., 1915 Wood St., Dallas, Tex. Own Forces. $185,000 field line tie-in station, at FARMERS BRANCH, TEX. CD 3/20.
Roy Lewis, Allef Rd., Houston, Tex., Purchase and Subcontract. $48,500. water lines, facilities, HOUSTON, TEX.
Roy Lewis, Allef Rd., Houston, Tex., Purchase and Subcontract. $62,000. storm sewers; $57,500, sanitary sewers, HOUSTON, TEX. CD 3/31.
Roy Lewis, Allef Rd., Houston, Tex., Purchase and Subcontract. $70,000, street constr., asph. paving, concrete curbs and gutters, HOUSTON, TEX.
Pittsburgh-Des Moines Co., Practorian Bldg., Dallas, Tex., LB $76,780, est. $85,000. 500,000 gal. steel water storage tank and tower, TEX. City, McKinney, Tex. Bids Apr. 2. CD 3/24.
City, Raymondville, Tex., Own Forces. $38,500. some addnl. water lines, RAYMONDVILLE, TEX. CD 9/12.
City, Raymondville, Tex., Own Forces. Approx. $60,000 some addnl. sewer lines, RAYMONDVILLE, TEX. CD 9/12.
City, Saginaw, Tex., Own Forces. $45,000. Proj. 3, addnl. water lines, SAGINAW, TEX. CD 7/10.
City, Saginaw, Tex., Own Forces. Approx. $60,000. Proj. 5, sanitary sewerage sys. rehabilitation work, SAGINAW, TEX. CD 7/10.
Ernest Loyd, Box 1120, Fort Worth, Tex., LB $61,115, est. $75,000. 6 mi. farm-to-market road and some bridging SEMINOLE, TEX. Gaines Co., Seminole, Tex. Bids Mar. 31. CD 3/19.
Bexar Co., Court House, San Antonio, Tex., Force Account. addnl. general road improv., grading, drainage, repairing, surf., $65,000, Precinct 1; $68,000, Precinct 2; $70,000, Precinct 3; $70,000, Precinct 4, SAN ANTONIO, TEX. Grand total $273,000. C. L Swan, San Antonio, Tex., road engr. CD 3/21.
McCarthy Chemical Co., Winnie, Tex., Own Forces. $110,000. last of gas lines in vicinity of gas fields and absorption plant, WINNIE, TEX. CD 7/31.
COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver,
Leone Constr. Co., Trinidad, Colo., CA, $61,846, est. $70,157, surf. tr. 2.261 mi. State Hy. 194, La Junta and Ft. Lyon, Otevo and Bent Counties. Bids Apr. 1. awarded Apr. 2. CD 3/27.
Schmidt Constr. Co., 10145 W. Colfax St., Lakewood, Colo., LB, $62,757, sewer lines and sewage disposal plant NEW CASTLE, COLO. New Castle Sanitation Dist., New Castle, Colo. Bids Mar. 28. CD 3/11.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **McCarthy Brothers Constr. Co.**, 4903 Delmar Blvd., St. Louis 8, Mo. CA $2,169,485. 1 story, 402x720 ft. steel, masonry main building, 121x126 ft. office wing, Adjutant General PUBLICATION CENTER, south of C.R.I. & Pac. R.R. west of Woodson Rd., Eng. 23-028-52-44, OVERLAND (ST. LOUIS 14, P.O.), MO. U. S. Eng., 601 Davidson Bldg., Kansas City 6, Md. CD 4/7 under LB.
Received bids from Dederick Constr. Co., Box 13067, Houston, Tex., **Fisher Constr. Co.**, Box 6127, Houston, Tex., **Knutson Constr. Co.**, 3893 S. Main St., Houston, Tex., and **Southwestern Constr. Co.**, Box 1204, Houston, Tex., Est. $2,600,000. 8 bldg. unit RESEARCH LABORATORY, FREEPORT, TEX. Dow Chemical Co., Freeport, Tex. Bids Apr. 2. CD 3/4.
Le Roy Walker, 4605 Hardy St., Houston, Tex., Own Forces. Approx. $320,000. 8 DWELLINGS, in Briarcroft Addn., HOUSTON, TEX. CD 3/13.
Embe Building Co., 5901 Almeda St., Houston, Tex., Owner Builds. $365,000, Job 2, 50 DWELLING units, PASADENA, TEX. CD 2/26.
J. O. Ford Constr. Co., Victoria, Tex., Owner Builds. Approx. $310,000. Unit 3, 36 DWELLINGS, VICTORIA, TEX. CD 2/6.
▲ **U. S. Eng.**, Box 1538, Albuquerque, N. M., rejected bids May 23, for construct, manage, finance of Buena Vista HOMES, FHA, Army Family Housing, at White Sands Proving Grounds, LAS CRUCES, N. M. LB $2,000,000. CD 5/29, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Idaho**—B.A. 5/8—Bureau Reclamation, Dpt. Interior, Irwin, grading, utilities for community facilities, Palisades Proj., Spec. 100C-142. CD 9/12/44.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

CALIFORNIA—State Div. Hys., P. Wks. Bldgs., Sacramento, rejected bids Mar. 12, road work 2.8 mi. between Browns Valley and 0.9 mi. east and between Stanfield Hill and Frenchtown Rd., Yuba Co., LB $109,785. CD 3/19, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Oliver & Coburn, 1006 Pardee St., Berkeley, Calif., CA, $100,000, FACTORY, 8 and Carlton Sts., BERKELEY, CALIF. Shand & Jurs Co., 917 Carlton St., Berkeley, Calif. J. Y. Long Co., 1441 Franklin St., Oakland, engrs.
Larsen-Ratto Constr. Co., 1901 Hedges Ave., Fresno, Calif., CA, $582,216. SCHOOL, near FIVE POINTS, CALIF. Westside Elementary School Dist., P. O. Box 455, Five Points, Calif. Bids Mar. 19, awarded Apr. 7. CD 3/26, under LB.
Pacific Co., 801 Cedar St., Berkeley, Calif., CA, $544,700 Hillcrest and Garretson SCHOOLS, RODEO, CALIF. Rodeo Elementary School Dist., Rodeo, Calif. Bids Apr. 2, awarded Apr. 7. CD 3/13.

CANADA

SOON LETS CONTRACT—BUILDINGS

Ont., Ancaster—SCHOOL—Sister Servants of Mary Immaculate, c/o James H. Haffa, 294 Ontario St., Toronto, soon lets contract 2 story, bsmnt., U-shaped, rein.-con. structural steel, brick, stone, school. $500,000. CD 12/18.
Ont., New Toronto—FACTORY—W. T. Gilbey Ltd., 18 St., soon lets contract 2 story factory addn. $150,000. Margison & Babcock, 119 Isabella St., Toronto, engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Modern Construction Ltd., Salisbury Rd., Moncton, N. B., CA, $65,000, two standard explosive storage bldgs. and access road at air base, CHATHAM, N. B. Deefence Constr. Ltd., 1032 Gottingen St., Halifax, N. S. Awarded Apr. 4. CD 4/8, under LB.
A. Janin & Co., Ltd., 1460 Sherbrooke St. W., Montreal, Que., CA, $175,000, standard headquarters bldg. at R.C.A.F. Station, BAGOTVILLE, QUE. Defence Constr. Ltd., 1247 Guy St., Montreal, Que. Bids Mar. 18. CD 3/6.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **G. S. Shipp & Son Ltd.**, Applewood Village, Toronto, Ont., Owner Builds. $1,700,000, 150 DWELLINGS, APPLEWOOD VILLAGE, (P.O. Dist. TORONTO), ONT.
Fassel & Baglier Constr. Co. Ltd., 2201 Kingston Rd., Toronto, Ont., Ca Est. $500,000, partly one and 2 story 156x159 ft., steel church, attached L-shaped monastery. 117x132 ft., Sheppard Ave., TORONTO, ONT. Passionist Fathers, Bayview Ave., Toronto, Ont., Frank L. Ehasz, 82 Beaver St., Toronto, Ont., consult. engr. W. M. Flanagan, 47 Radford Ave., and Robert A. Servos, 2295 Yonage St., Toronto archts. Awarded Apr. 7.

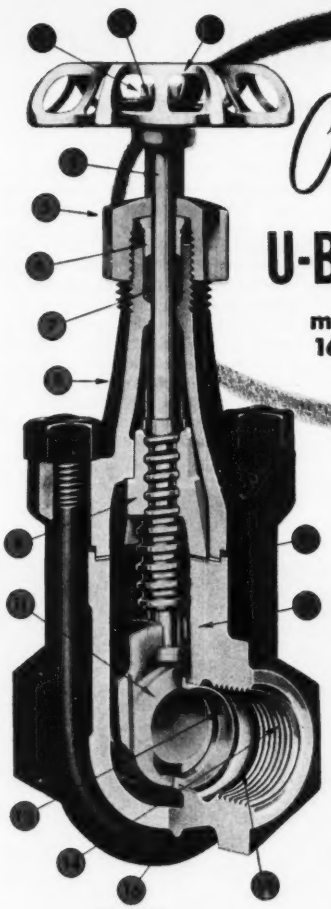
Proposed Projects

WATER SUPPLY

Mo., Chaffee—City, c/o City Council, Improv. water supply, distr. sys., modernization of sanitary sewerage sys., incl. disposal plant, etc., $248,000,
(Continued on page 149)

Only Jenkins U-BOLT GATES

measure up to this 16-point standard

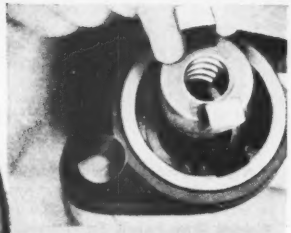


1. Perfect-Grip Handwheel
2. Valve Index Plate
3. Secure Wheel Nut
4. Heavy Manganese Bronze Spindle
5. Large Packing Nut
6. Self-centering Packing Gland
7. Deep Stuffing Box
8. Heavy Duty Bonnet
9. Unique Renewable Bonnet-Saver Bushing
10. Body-Bonnet Safety Joint
11. Extra-Wide Gauge Reversible Bronze Wedge
12. Heavy-Duty Body
13. Bronze Seat Rings, Expanded in
14. Full Length Pipe Threads
15. Liberal Diaphragm Clearance
16. Strong U-Bolt

PRESSURES

Screwed	Flanged
150 lbs. Steam	125 lbs. Steam
225 lbs. O.W.G.	175 lbs. O.W.G.

Bronze Mounted or All Iron—Sizes ¼" to 3"



BONNET SAVER BUSHING — No need to junk the bonnet when operating threads are worn. Just slip in a new, patented "Bonnet-Saver Bushing" and have good-as-new thread engagement.

EASY TO CLEAN — You can really get into the bonnet of this valve to clean out the chamber above the operating threads.

RUGGED CONSTRUCTION — Here's proof. When the U-bolt nut was tightened down with a 14" socket wrench until the high tensile steel bolt broke, the heavy duty body and bonnet did not crack!

TROUBLE IS RULED OUT! Check these 16 advanced features—for wear-resistance . . . for ease of maintenance. From handwheel to diaphragm, notice how thoroughly trouble has been ruled out in designing this U-bolt valve. No other valve in its class measures up to Jenkins U-bolt Gate on all these points, many of them exclusive.

You can take it apart and put it together again in two minutes, and it's a cinch to clean. When operating threads become worn, just slip in a new "Bonnet Saver Bushing" and restore it to new-valve efficiency. It's a favorite for those plumbing-heating, mine, mill or any services where excessive sediment is tough on valves and where freezing is a hazard.

For "renewability" without waste, bull-necked endurance, and low upkeep cost, you can't beat Jenkins U-bolt Valves. Yet they cost no more! Full details and specifications in new circular, Form 179-B. Jenkins Bros., 100 Park Avenue, New York 17. Jenkins Bros. Ltd., Montreal.

Sold through leading Industrial Distributors

JENKINS VALVES

LOOK FOR THE DIAMOND MARK

SINCE 1864 — TRADE JENKINS MARK

Jenkins Bros

You get the same strength with less steel

when you use American Welded Wire Fabric

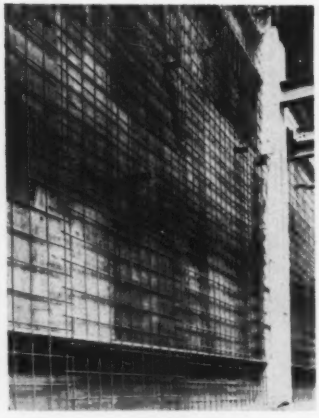
● A quick glance at the American Concrete Institute Code will show you how to save steel by buying American Welded Wire Fabric for concrete reinforcement.

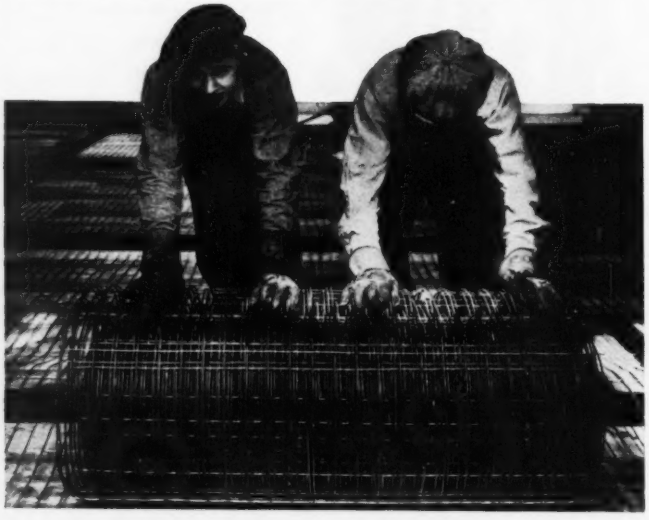
In the first place, American Welded Wire Fabric is allowed a 40% greater working stress than ordinary reinforcing materials. That's because our fabric is manufactured by the electric welding process from *cold drawn* steel wire having a guaranteed yield strength of 56,000 psi. Compare that to other reinforcing materials! Also, cold drawn wire has no well-defined yield point. It continues to resist stress throughout its entire strength range. And the ultimate tensile strength is *70,000* psi. Each welded intersection of the wire in the fabric provides special anchorage of the reinforcing members in the concrete slab.

When you use American Welded Wire Fabric for reinforced concrete walls, you can use *28% less steel area* than with ordinary reinforcing materials. You just don't have to buy so much steel to do your job. This specification is partly due to the high strength of American Welded Wire Fabric, and to its efficient bond provided by small high strength members closely spaced and by the positive anchorage provided by the cross wires rigidly welded to the longitudinal wires.

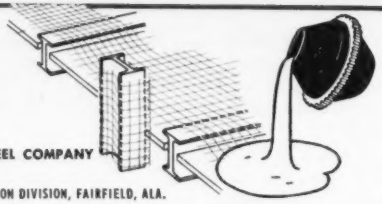
But here's the best part: American Welded Wire Fabric is a prefabricated reinforcing material that is easy to install. Labor costs for placing will go down drastically. As a matter of fact, installation is so easy that there's simply no comparison with other materials.

Many standard designs and sizes are now available from jobbers' and dealers' stocks as well as prompt mill shipments to identified projects. Present CMP Regulations assure adequate warehouse stock of Welded Wire Fabric. If you would like further information, or literature, just drop a line to our nearest sales office.





This sketch shows where American Welded Wire Fabric is used in modern concrete buildings. It reinforces walls, floors and roofs, can be draped over beams and girders and wrapped around pillars. Many uses of concrete in irregular structural shapes are made practical by American Welded Wire Fabric reinforcement.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Every type of concrete construction needs

U·S·S AMERICAN WELDED WIRE FABRIC

reinforcement

UNITED STATES STEEL

(Continued from page 146)

Russell & Axon, 408 Olive St., St. Louis, Zone 2, consult, engrs.

O., **Westerville**—Village, water treatment and sewage facilities, incl. treatment plant and mains. $559,000. CD 1/26/51.

Tex., **Baytown**—City, defeated bonds Apr. 5, WW sys. rehabilitation, $1/5,000; new WW addns. $355,000.

▲ Tex., **Victoria**—City, voted bonds Mar. 28, Job 1, water sys. rehabilitation, $545,000; Job 2 water supply, $270,000; Job 3 water distr. lines, $400,000; Job 4 water elevated storage and ground, $350,000. Lockwood & Andrews, Union National Bank Bldg., Houston, consult. engrs. CD 3/13.

▲ Que., **Montreal**—Municipality, City Hall, feeder main from Cote des Neiges Reservoir to Snowden, $1,250,000. Henri Gibeau, City Hall, city engr. CD 9/7/44.

SEWERS, WASTE DISPOSAL

Ill., **Champaign**—City, City Hall, several miles 12- to 48-in. storm sewers in Russell St. and various other streets in that area, $250,000. John T. Kearns, City Hall, city engr. CD 3/7.

▲ Mich., **East Lansing**—City, John M. Patriarche, mgr., storm sewer 6 ft. diam., tunnel work. $1,500,000. CD 1/26/51.

▲ Mo., **Kansas City**—City, City Hall, Dpt. P. Wks., $2,000,000 bond election Aug. 5, trunk sewers.

Neb., **Fremont**—City, voted $400,000 bonds Apr. 1, sewers, sewage plant. C. A. Haskins, Finance Bldg., Kansas City, Mo., consult. engr. CD 3/18.

▲ O., **Toledo**—Comrs. Lucas Co., Court House, storm sewer from Tifft Ditch to Ten Mile Creek 2¼ mi. to serve Washington Twp. and West Toledo. $2,761,000. Guy E. Neeper, co. engr. CD 11/2/44.

▲ Okla., **Enid**—City, bond election May 9, sanitary sewer extens. $422,500; storm sewers, $851,000; sewage disposal, $1,658,000. Gerald Wilkins, c/o owner, city engr. CD 6/19.

Tex., **Baytown**—City, defeated bonds Apr. 5, sewer lines, $250,000; sewage disposal plant, $225,000.

▲ Tex., **Victoria**—City, voted bonds Mar. 28, Job 5, sanitary sewers, $455,000; Job 6 existing sanitary sewerage sys. rehabilitation, $730,000. Lockwood & Andrews, Union National Bank Bldg., Houston, consult. engrs. CD 12/28.

BRIDGES

▲ **Kentucky and Indiana**—Louisville Bridge Comn., City Hall, 2 new bridges over Ohio River, one in western Louisville directly across to New Albany, Ind., other parallel to Clark Memorial Bridge, $2,000,000. Coverdale & Colpitts, 120 Wall St., New York, N. Y., making traffic survey.

UTAH—State Road Comn., State Capitol, Salt Lake City.

Salt Lake Co.—steel arch bridge across San Juan River at Mexican Hat. $250,000. E. C. Johnson, c/o owner, state road engr.

▲ ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Toronto—bridge across Humber River doubled deck to provide traffic from Queen Elizabeth Way into Toronto at western city limits. $2,600,000.

STREETS AND ROADS

▲ Mass., **Southbridge**—Town, Henry A. Raclcot, engr., street constr., various locations. $1,560,000.

▲ Mo., **Kansas City**—City, Dpt. P. Wks., City Hall, bond election Aug. 5, freeways, expressways, trafficways, $2 000 000; adjustment of streets for traffic relief, $1.000.000; to complete Manchester Traffic, $2,300,000. CD 3/8/51.

Neb., **South Sioux City**—City, paving. $260,000. James Cashman, city engr.

Okla., **Oklahoma City**—Oklahoma Co., Court House, grade and pave across road from Oklahoma City to Midwest City, $260,000; Eastern Ave. to Cleveland Co. line, $160,000. Art Marvel, co. engr. CD 12/18.

Tex., **Abilene**—City, c/o A. P. Hancock, mgr., City Hall, voted bonds Apr. 1, street imprvs., various parts of town. $925,000. Freese & Nichols, 407 Dancigei Bldg., Fort Worth, consult. engrs. CD 3/5.

EARTHWORK, WATERWAYS

Okla., **Enid**—City, bond election May 9, flood control. $295,000. Gerald Wilkins, c/o owner, engr. CD 8/29/50.

▲† Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, channel project, incl. imprvs. on Sabine Pass Anchorage Basin, 3 cutoffs on Neches River Canal. $5,740,000. CD 6/6/44.

Tex., **Monte Alto**—Willacy County Water Dist. Bd., Monte Alto, voted bonds, Job 1, irrigation sys. rehabilitation, $210,000; Job 2 irrigation canals (earthen); Job 3, pumping unit, addnl. facilities, $100,000. CD 3/7.

AIRPORTS

Conn., **Windsor Locks**—RUNWAY EXTEN.—State Connecticut National Guard, State Armory, Hartford, 1,700 ft. runway extension 220 ft. strip wide-high intensity lighting, Bradley Field. $500,000. CD 11/15.

▲ Ill., **Chicago**—APRONS, etc.—City, City Hall, constr. aprons, taxiways, fuel pits, fuel lines and utility tunnels at O'Hare Field. $1,800,000.

▲ Mich., **Lansing**—AIRPORT—State, Lester J. Maitland, Dpt. Aeronautics, Capitol City Airport, airport, incl. administration bldg., cargo warehouse, relocation and reconstr. runways, hangars, repair shops, control tower, etc., $4,000,000. L. C. Andrews, c/o owner, ch. engr. CD 11/13/51.

▲ Mo., **Kansas City**—AIRPORT—City, City Hall, Zone 6, bond election Aug. 5, overhaul base to be leased to T.W.A., $15,500,000; rental facilities for another airline company, $5,000,000; industrial airport, $4,400,000.

Wash., **Seattle**—HANGAR, etc.—Pan American World Airways Inc., 1302 4 Ave., hangar and lean-to Seattle-Tacoma International Airport, $650,000. CD 1/8.

▲ Ont., **Centralia**—AIR BASE DEVELOPMENT—Defence Construction Ltd., 441 Queen's Quay W., Toronto, Ont., air base development, heating plant, $950,000; ground instruction school, $400,000; roads $51,000; officers messes, traffic control bldgs. Total est. $2,000,000. M. M. Dillon & Co., Bank of Toronto Bldg., London, consult. engr. R. P. Ople, regional engr. CD 3/26.

LATIN AMERICA

▲ **Mexico, Merida**—Srla. de Recursos Hidraulicos (Hydraulic Resources Ministry), P. de la Reforma, 69, Mexico City, plans 50 small irrigation services. $10,500,000.

Mexico, Mexico City—Gabriel Alarcon J Ma Marraqui, 5, Mexico City, plans 2,000-seat cinema. $600,000.

PUBLIC BUILDINGS

▲ Calif., **Lafayette**—SCHOOLS—Acalanes High School District, Lafayette, voted bonds, Orinda Branch High School and expanding Las Lomas High School. $1,500,000. CD 2/6.

▲ Calif., **San Lorenzo**—SCHOOL—Hayward Union High School Dist., 2230 Foothill Bld., Hayward, voted $3,000,000 bonds, school construction. CD 4/7

Calif., **San Mateo**—SCHOOL—San Mateo City Elementary School Dist., San Mateo, plans by Falk & Booth, 9 Main St., San Francisco, Albion H. Horrall Elementary School. $614,250. CD 6/2/48.

Conn., **Manchester**—SCHOOL—Town, Bd. Educ., high school, Memorial Field, 40 acre tract off Center St. $750,000.

Ill., **Glen Ellyn**—SCHOOL—School Dist. 41, Glen Ellyn, plans by Holabird, Root & Burgee, 180 N. Wabash St., Chicago 1, Ill., Junior High School $850,000.

▲† Ill., **Joliet**—ORDNANCE PLANT—U. S. Eng., 520 Merchandise Mart, Chicago 54, Ill., Joliet Ordnance Plant modification, $5,000,000. United States Rubber Co., will operate.

▲ La., **Shreveport**—HOUSING—Shreveport Housing Auth., 500 low cost housing units. $3,750,000.

Mass., **Springfield**—SCHOOL—City, Dpt. P. Bldgs., City Hall, plans by Morris W. Maloney, 220 Dwight St., Memorial Elementary School, $540,000.

Mass., **Wellesley**—SCHOOL—Town, School Bldg. Comn., plans by Alden, Parker, Clinch & Crimp, 177 State St., Boston, brick, steel, concrete school, Fiske Dist., $755,000. Hubbard Lawless & Blakely, 177 State St., Boston, mech. engrs., Edward A. Tucker, 88 Broad St., Boston, struct. engr.

▲ Mich., **East Lansing**—SCHOOL—City, C. E. MacDonald, supt., 2 story, bsmnt., brick, steel, concrete high school. $2,000,000.

▲ Mich., **Ecorse**—SCHOOL—Ecorse Twp., Irvin Friend, chn. School Bd., 2 story, bsmnt., brick, steel high school addn. $3,650,000.

▲ Minn., **Faribault**—SCHOOL—Bd. Educ., R. W. Klemer, clk., defeated, $1,300,000 bonds, schools, Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. CD 3/13.

Minn., **Hastings**—SCHOOL—Bd. Educ., Special School Dist. 26, voted $579,000 bonds Mar. 29, school, $700,000, E. B. Croft, 3543 Aldrich Ave. S., Minneapolis, archt. CD 7/31/46.

▲ Minn., **Winona**—HOUSING—Winona Housing & Redevelopment Auth., E. G. Schernecker, exec. dir., 160 housing units, right of way for Hy. 61 south of Red Top Cabins, $1,811,600. CD 2/7/51.

▲ Mo., **St. Louis**—SCHOOL—Bd. Educ., V. Harry Rhodes, comr., School Bldg., 911 Locust St., Zone 1, 5 story, rein.-con., brick, steel, stone Technical High School, McRee Ave. north of Northrop Ave. $5,000,000. CD 6/11/51.

▲ Neb., **Hastings**—HIGH SCHOOL—Bd. Educ., Hastings, voted $1,570,000 bonds, Senior High School. Clark & Enersen, 1323 Sharp Bldg., Lincoln, archts. CD 3/11.

Neb., **St. Paul**—HIGH SCHOOL—Bd. Educ., St. Paul, voted bonds, high school. $500,000.

▲ N. J., **Port Newark**—TERMINAL—Port of New York Auth., 111 8th Ave., New York, 11, N. Y., three berth marine terminal, incl. wharves and cargo terminal bldgs. on south side of Port Newark Channel and Newark Bay for use by Waterman Steamship Corp. $6,000,000.

N. Y., **New York**—BUS DEPOT—Port of New York Auth., 1118th Ave., Zone 11, bus depot, street widening and underpass to subway at Fort Washington Ave. and W. 178 St. $628,000.

▲ O., **Cincinnati**—RESIDENCES—Cincinnati Metropolitan Housing Auth., 595 Armory St., plans by Bernard Pepinsky, Union Trust Bldg., 336 two story bsmnt. frame residences, Beekman St. $3,225,000; plans by Samuel Hannaford & Sons, Dixie Terminal Bldg., 340 two story bsmnt., frame residences, Kirby Rd. $3,264,000. Edward Larson, 2nd Natl. Bank Bldg., engr.; plans by Kruckemeyer & Strong, Carew Tower, 370 two story bsmnt frame residences, $3,752,000. Ayers & Graf, 527 Linton St., engrs. CD 1/6/50.

▲ O., **Delaware**—COTTAGE—Dpt. P. Welfare, State Office Bldg., S. Front St., Columbus, replace fire-destroyed Riverside Cottage, erect, preparation bldg., resurf. roadways and sidewalks at Girls Industrial School. $1,100,000.

▲ O., **Marion**—HOSPITAL—City, City Hall and Marion Co., Marion, plans by Dan A. Carmichael, 5 E. Long St., Columbus, city-county hospital. $1,700,000. CD 11/16/50

O., **Mentor**—HIGH SCHOOL—Bd. Educ., Mentor, voted $975,000 bonds, Junior High School. CD 2/28.

▲ Pa., **Bristol**—HIGH SCHOOL—Bristol Twp. School Dist., Bristol, plans by Miclewright & Mountford, 72 Ewing St., Trenton, N. J., Delhaas Junior High School addn. $1,000,000. CD 2/14.

▲ Pa., **Connellsville** — HIGH SCHOOL — Connellsville Joint School, Connellsville, plans by Hunter-Caldwell & Campbell, 3601 5th Ave., Altoona, 2 story brick, steel frame high school. $2,000,000.

Pa., **Galeton**—SCHOOLS—Joint School Bd. of Galeton, plans by Freeburg & Lindquist, 16 E. 4 St., Jamestown, N. Y., 2 story, brick, block grade and high school bldg. $650,000.

▲ Pa., **Hatfield**—SCHOOL—Hatfield Joint Consolidated School, Hatfield, school. $1,000,000. CD 12/28/45.

Pa., **West Chester**—HIGH SCHOOL—West Chester Public & Joint High Schools, West Chester, plans by Baacer, Young & Schultze, 1500 Walnut St., Phila., Junior High School. $800,000.

▲ Tex., **Abilene**—SCHOOLS—Abilene Independent School Dist., Abilene, voted bonds Apr. 1, schools in various parts of town. $3,975,000. Associated Architects, Abilene, archts. CD 3/6.

Tex., **Highland Park**—SCHOOL—Highland Park Independent School Dist., Highland Park, plans by Goodwin & Cavitt, 4801 Lemmon Ave., Dallas, school. $712,000 bonding wanted.

▲ Tex., **Texarkana**—HOUSING—Texarkana Housing Auth., c/o W. S. Chance, chn., Texarkana, plans by Reinheimer & Cox, 411 Texarkana Natl. Bank Bldg., 200 masonry housing units. $1,500,000. CD 11/13.

▲ Va., **Fairfax**—SCHOOLS—Fairfax Co. Bd. Educ., Fairfax, plans by Earl Bailey, 6915 29th St. N., Arlington, Merrifield High School at Falls Church, $500,000; plans by Dixon & Norman, 1103 E. Main St., Richmond, Falls Church High School at Falls Church, $600,000; plans by Robert A. Willgoose, 300 Montgomery St., Alexandria, Annandale High School at Annandale, $800,000. CD 6/6/50.

Wis., **Milwaukee**—SCHOOL—Bd. School Directors, 1111 N. 10 St., Zone 3, plans by Fitz von Grossmann & Assocs., 4630 W. Burleigh St., Milwaukee, Zone 10. S. 54 St. and W. Montana St. School. $750,000. CD 8/10/50.

Alta., **Calgary**—EDUCATION—Province of Alberta, Edmonton, education bldg. $635,000 voted. Dpt. P. Wks., Edmonton, engr.

▲ Ont., **Cornwall**—SCHOOLS—Vocational & Collegiate School Bd., Cornwall, an addition to and reconstructing existing bldgs. $1,600,000. CD 2/7/51.

Ont., **Whitby**—SCHOOL—Whitby High School Dist., Wm. A. Dryden, chn., Brooklin, school, $650,000.

COMMERCIAL BUILDINGS

▲ Calif., **Los Angeles**—SHOPPING CENTER—Metropolitan Life Insurance Co., c/o Stiles Clements, archt., Van Nuys Bldg., shopping center for Parklabrea Project. $2,000,000.

Ind., **Indianapolis**—HOMES—ABC Homes, Inc., 16 and Ritter Sts., 50 homes in Hawthorne Manor subdivision, $500,000.

Ind., **Indianapolis**—HOMES—Dawson Bros. Co., 2004 E 62 St., Indianapolis, 40 homes. $720,000.

▲ Ind., **Indianapolis**—APARTMENT—Markun Realty Co., Louis Markum, 3501 N. Emerson St., 220 unit park apartment, incl. 20 bldgs., development, E. 38 St. near Meadowbrook Apartments. $2,250,000. Paul Cripe, Architects Bldg., consult. engr.

▲ Ky., **Owensboro**—COLLEGE—Wesleyan College, Owensboro, plans by Poundstone, Ayers & Godwin, Boan Allen Bldg., Atlanta, Ga., Roberts & Marshall, and Max Bisson, Owensboro, combination classroom and admin. bldg., student union bldg. and 2 dormitories $1,000,000.

▲ Mass., **Ayer**—HOUSING—U. S. Eng., 857 Commonwealth Ave., Boston, construct, manage, finance 200 housing units, Fort Devens. $1,500,000. Arthur G. Mansellan, 30 Huntington Ave., Boston, archt. CD 3/7.

▲ Mass., **Boston** — HOSPITAL — Massachusetts General Hospital, Fruit St., plans by Coolidge, Shenley, Bulfinch & Abbott, 1 Court St., child psychiatry unit; medical offices for staff doctors; house officers quarters; laundry and mail shop; renovation of out patient dpt. $7,500,000.

Mass., **Worcester**—ENGINEERING—Worcester Polytechnic Institute, Institute Rd., plans by W. Cornell Appiton, 14 Kenmore St., Boston, civil engineering bldg., Salisbury St. $550,000.

▲ Minn., **Minneapolis**—SHOPPING CENTER—Bowen & Strand, 7045 Oak Grove Blvd., Zone 23, plans by

Lienbenberg & Kaplan, 51 S. 13 St., shopping center, in Richfield Village in area bounded by Lyndale ave. south, Hy. 100 (78 St.), Dupont Ave. south and 77 St. $1,000,000.

▲ Mo., Kansas City—SHOPPING CENTER—J. C. Nichols Investment Co., 310 Ward Parkway, Zone 2, plans by Edw. W Tanner & Assoc., 310 Ward Parkway, Zone 2, development of South Town Shopping Center, incl. 5 buildings, 50 to 75 shops, parking areas, landscaped, etc., 63 and Troost Sts. to Meyer Blvd. Several million dollars.

▲ Mo., Parkville—DWELLINGS—Carl O. Nelson Co., 3739 Broadway, Kansas City, Mo., 120 dwelling units, $1,500,000.

▲ N. J., Pennsauken—RESIDENTIAL, etc.—Roosevelt Field, Inc., Herbert I. Silverson, pres., Roosevelt Field, Garden City, N. Y., residential and shopping and manufacturing center, $2,500,000.

▲ O., Cincinnati—HOMES—Carl Hunsicker & Leslie Mueller, 4438 Appleton St., 60 one family bsmt., brick homes on Compton Rd., east of Winton Rd. $1,500,000. Ayers & Graf, 527 Linton St., consult. engrs.

▲ Tex., Dallas—DENTISTRY, etc.—Baylor University, Waco, expansion of Baylor College of Dentistry, $3,000,000; expansion of College of Graduate Research, $1,000,000. CD 3/13/51 and 7/6/51.

▲ Tex., Houston—COLLEGE of MEDICINE—Baylor University, Waco, expansion of Baylor College of Medicine. $3,500,000. CD 12/11/47.

▲ Tex., Houston — DWELLINGS — David Hannah, 800 Main St., P. C. Stewart, 5308 Carrolton St., 40 frame dwellings, $320,000; 55 frame dwellings, $375,000; 45 frame, masonry dwellings, $400,000; 52 mostly masonry dwellings, $450,000, in new tract off Old Magnolia Rd.

▲ Tex., San Antonio—SEMINARY, etc.—Archdiocese of San Antonio, 230 Dwyer Ave., main seminary bldg., $500,000; dormitory, $350,000; classroom and admin. bldg. $400,000, on Old Trinity University tract.

▲ Tex., Waco—DINING HALLS, etc.—Baylor University, Waco, dining halls, $1,000,000; classrooms, $1,500,000; dormitories, $2,000,000.

▲ Tex., Wichita Falls—BULIDING—Gas Building Corp., S. Erway St., Dallas, addn. of 6-stories to existing 6 story Nacol bldg. just purchased. $1,650,000.

Wash., Wenatchee—HOUSES—A. D. Johns, 4516 37 Ave. S.W., Seattle, 46 houses, $450,000.

▲ Alta., South Edmonton — DEPARTMENT STORE — W. C. Woodward Stores Ltd., Edmonton, 2 story, 100,000 sq. ft. concrete, structural steel department store, $3,000,000.

▲ Ont., Cornwall—HOSPITAL—Daughters of Wisdom, Sherbrooke, Que., plans by H. H. Roberts, Westport, 150-bed hospital and nursing school, Alice St. $2,000,000.

▲ Ont., Toronto—OFFICE—Principal Investments Ltd., 67 Richmond St. W., corvert 7-story apartment hotel, 600 University Ave. Alexandra Place to office bldg. $1,000,000.

Que., Granby—CONVENT—Rev. Soeurs de la Presentation de Marie, Granby, old section of convent, 232 Principale St. Approx. $300,000.

INDUSTRIAL BUILDINGS

▲ Ark., Bauxite—PLANT—Reynolds Metals Co., 3 and Grace Sts., Richmond, Va., plant addn., $2,194,000. CD 11/1.

▲ Ark., Ft. Smith—FACTORY—Harding Glass Co., 2524 N. 11 St., factory addn., $2,163,207.

▲ Ark., Newport—PLANT—Victor Metals Products Co., Newport plant, $1,250,000.

Conn., Bloomfield—BOILER PLANT, etc.—Kaman Aircraft Corp., Bradley Field, Windsor Locks, plans by W. Stewart Thompson & Phelps Barnum, 250 Park Ave., New York, N. Y. boiler plant, maintenance shop and garage.

Del., New Castle—PLANT—Delaware Rayon Co., New Castle, plans by Lockwood Greene Engineers, Inc., 10 Rockefeller Plaza, New York, N. Y., mfg. plant, $312,000.

▲ Ind., La Porte—MANUFACTURING, etc.—La Porte Cargo Tractor Div., Allis Chalmers Co., W. A. Roberts, pres., 2 story, 555x675x225 triangular shape, brick, rein.-con. manufacturing and storage bldg., along C & O Ry. $3,000,000.

▲ Ia., Davenport—PLANT EXPANSION—Dewey Portland Cement Co., John H. Bickert, genl. mgr., 802 Kahl Bldg., plant expansion, $2,000,000.

Ia., Keokuk—PLANT—Keokuk Electro-Metals Co., plant addn. and equipment. $551,389.

▲ La., New Orleans—PLANT—Delta Gas Corp., c/o Wyatt C. Hedrick, archt. and engr., 5201 Fannin St., Houston, Tex., chemical plant, $7,500,000.

Mich., Algonac—FACTORY—Algonac Mfg. Co., Algonac, 1 story, brick, steel factory, $600,000.

▲ N. J., Kenilworth—WAREHOUSE—Owner, c/o Vincent Kling, archt., 917 Corinthian Ave., Phila., Pa., storage warehouse and railroad siding, $5,000,000.

Okla., Pryor—PLANT—Midwest Carbide Co., Keokuk, Ia., carbid plant. $750,000.

Pa., McKeesport—PLANT—Greensburg & Connellsville Coal Co., Union Trust Bldg., Pittsburgh, coal cleaning plant. $375,000. Batton Engineering Co., 1100 Union Trust Bldg., Pittsburgh, consult. engr.

▲ Tex., Gail—PLANT—J. R. Butler Interests, Big Spring, natural gasoline plant in East Vealmoor Field, Borden and Howard Counties. $1,750,000.

Tex., Garland—PLANT—Intercontinental Manufacturing Co., Garland, assembly line plant unit. $350,000.

▲ Que., Roberval—PLANT—Sulphur Converting Corp., 514 Windsor Hotel, Montreal, plant. $3,000,000.

UNCLASSIFIED

Arizona—RURAL DISTRIBUTION LINES—Navopache Electric Cooperative, Lakeside, 22 mi. rural distr. line and sys. imprvs., Navajo Co. $310,000.

▲ Delaware—RURAL DISTRIBUTION LINES—Delaware Rural Electric Assoc., Greenwood, rural distr. lines and sub-station. $1,100,000. R. R. Jefferson, c/o owner, engr. CD 11/18/46.

▲ Mo., Kansas City—PARKING—City, Dpt. P. Wks., City Hall, $1,000,000 bond election Aug. 5, off-street parking.

Mo., Springfield—GAS SYSTEM—City, Bd. P. Utilities, 324 E. Walnut St., facilities for underground storage of butane gas for municipal gas sys. $400,000.

O., Cleveland—PLAYGROUND—City, City Hall, Lakeside and 6 Sts., plans by John S. Navy, recreation comr. and engr. and Thomas Jones, landscape archt. and planning engr., Cleveland Parks Dpt., c/o owner, playground, Clark Ave. and W. 11 St. $500,000. CD 11/14/50.

Oklahoma—RURAL DISTRIBUTION LINES—Northeast Oklahoma Electric Co-operative, Vinita, 257 mi. electric distr. line and sys. imprvs., Craig Co. $992,000.

S. C., North Charleston—STORAGE TANKS—Hewitt Oil Co., 5 Exchange St., Charleston, 6 oil terminal storage tanks. $432,000.

▲Texas, New Mexico, Colorado, Utah, Idaho and Washington—GAS MAIN LINE—Pacific Northwest Gas Pipe Line Corp., Esperson Bldg., Houston, Tex., 1,400 mi. 26 in. gas main line from vicinity Wichita Falls, Tex. to near Tacoma and Spokane, Wash. $130,000,000. Route of line changed. Fish Engineering Corp., M & M Bldg., Houston, Tex., engrs. CD 4/18/51.

▲ † Wash., Bremerton—DRYDOCK—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va. 164x200 ft. Drydock 5 extension at Puget Sound Naval Shipyard, $9,000,000.

Man., Winnipeg—STADIUM—Co-operative Sports Society Winnipeg, 15,000 seating station, $500,000.

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STEEL DECK...

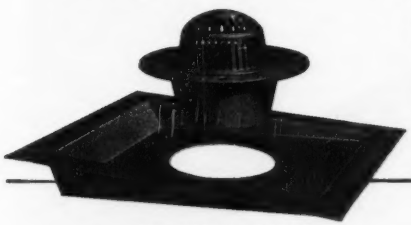
Mahon Steel Deck Roof Installed on new Lincoln-Mercury Plant, Wayne, Mich. Giffels & Vallet, Inc., L. Rossetti, Architects and Engineers. Bryant & Detwiller Co., Contractors.

BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting or fitting necessary.

1,500,000 Sq. Ft. of Steel Deck Protects New Lincoln-Mercury Plant!

The increasing, widespread use of Steel Deck in roof construction in both industrial and commercial buildings is a logical development . . . because, no matter how you compare different types of roof construction, and materials employed, you will find that Steel Deck is the most economical, permanent, firesafe roof material available today. Its light weight permits structural economies, and the fact that it can be insulated to any degree, to produce specific thermal properties for any temperature range, reduces total roof cost per sq. ft. to an absolute minimum in any given locality. Mahon Steel Deck offers other desirable features . . . its narrow, vertical-leg stiffening ribs have no angular or horizontal surfaces where troublesome dust might accumulate, and, in addition to its primary use in roof construction, Mahon Steel Deck, due to its basic design, lends itself to a broader range of uses in modern buildings . . . alert designers are finding it ideally suitable for curtain walls, interior dividing walls, partitions, suspended ceilings, and permanent concrete floor forms. See Mahon's Steel Deck Insert and Mahon's Insulated Metal Wall Insert in Sweet's Files, or write for Catalogs B-52-A and B.



SUMP RECESSES and SUMPS

Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

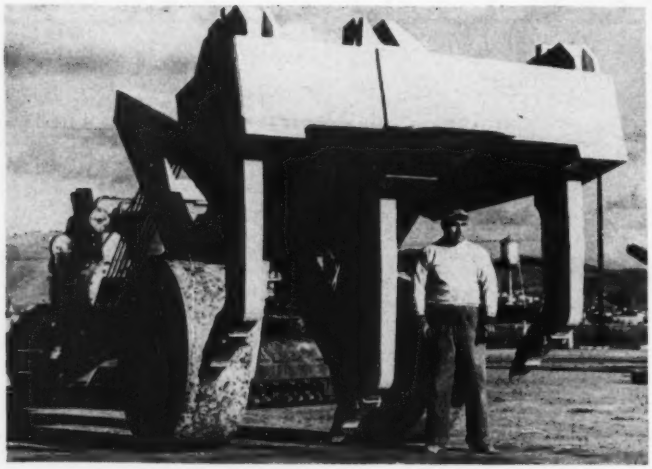
THE R. C. MAHON COMPANY

Detroit 34, Michigan • Western Sales Division, Chicago 4, Illinois

Representatives in all Principal Cities

Manufacturers of Steel Deck for Roofs, Partitions, Ceilings and Floors; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel, Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

MAHON



Heavy-duty ripper joins monster class

To label this mammoth 15-ton ripper as a "heavy-duty" machine is certainly an understatement. The monstrous rig which dwarfs the operator can take the combined pull of six big tractors (or 180,000 lb) on the center tooth alone and can rip any laminated or foliated material such as shale or decomposed granite. The 52-in. dia wheels are 18 in. wide and can carry the teeth clear, as shown, for quick travel. Operating from the tractor winch, 210 ft of $\frac{7}{8}$-in. cable control penetration of the center tooth to its three designed depths of 60, 48 and 36 in.; the outside teeth to two depths, 48 and 36 in. It represents the culmination of 20 years of development work and study of ripping requirements and the manufacturer expects in many cases to take the place of explosives for shattering material to be handled by scrapers or shovels. Dimensions: 9 ft wide, 9 ft 9 in high and over-all length 25 ft 6 in. The first of the rippers was sent to a construction company at Isabella Dam.—PETERSON TRACTOR & EQUIPMENT CO., SAN LEANDRO, CALIF.

Drafting machine scales are offered in metal

A line of standard metal drafting machine scales are being marketed under the trade name Duraline. It consists of twelve standard types of graduations most used by civil, mechanical and electrical engineers, draftsmen and architects. Each style is available in 6, 12, 18 and 24-in. lengths. Duraline scales are made of an aluminum alloy and will maintain their accuracy and hold a true smooth ruling edge. Since the graduations do not extent to the drawing edge, there is no file tooth reaction on the pencil point. Smears are eliminated and drawing stays clean.

Although these scales were designed for use with Universal Boardmaster drafting machines, the chucks permit their being used on any standard drafting machine. UNIVERSAL DRAFTING MACHINE CORP., 7960 LORAIN AVENUE, CLEVELAND, OHIO.

Plastic pipes have glass fibre interiors

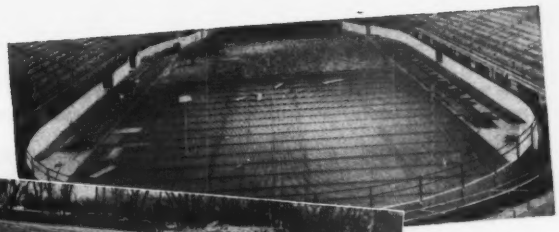
Impervous to corrosion, yet flexible enough to be bent by hand; one-fifth the weight of steel pipe, yet with a glass-smooth interior for high flow factor; tough enough to withstand heavy pressures, yet light enough to be carried by a ten-year-old: these are some of the characteristics of a new thermo-setting, glass-fiber-reinforced, plastic pipe which the manufacturer says should not be confused with thermoplastic pipe which shatters easily and melts at elevated temperatures. Although it is not a substitute for cast iron, steel, or other piping, it is said to be superior for many applications to other pipe.

Two sizes are now being manufactured: $3\frac{1}{2}$ and $4\frac{1}{2}$ in., while $6\frac{5}{8}$ and $2\frac{3}{8}$ in. are in the process of development. All pipe lengths are 20 ft, and each size is now manufactured in three wall thicknesses. For example, the lightest joint of $3\frac{1}{2}$ in. weighs 29 lb. and will withstand a working pressure of 200 lb. per sq. in. with a slightly thicker wall, the pipe weighs 32 lb. per length and will withstand 400 lb. pressure.

The collapse rating of the $3\frac{1}{2}$-in. tube is 1500 lb. per sq. in.; and tensile strength, 14,800 lb. per sq. in. The pipe can withstand a 40,000-lb. pull and coupling threads, 10,000 lb. Couplings come in several types; detachable with rubber pressure ring, threaded and coupled, permanent chemically welded and threaded with upset ends. PERRAULT BROTHERS PLASTIC PIPE DIVISION, TULSA, OKLAHOMA.

(Continued on page 154)

To better their performance— these 3 Denver rinks picked a famous partner . . .



Denver Coliseum Rink

Denver Country Club Rink

University of Denver Rink

BYERS Wrought Iron Pipe

When these three major Denver ice skating rinks were built, Byers Wrought Iron pipe was given another significant vote of confidence.

In the Denver Coliseum Rink, over 48 tons of time-tested Byers Wrought Iron pipe was used for the floor piping. Roland L. Linder, Denver, was the consulting architect; Roberts and Schaefer Company—Lorimer and Rose, Chicago—New York, the associate engineers and architects; the ice rink proper was engineered by G. A. Post of Bevington-Williams, Inc., Indianapolis; McCarty-Johnson, Inc., Denver, handled the fabrication.

The Denver Country Club took decisive steps to assure permanence in their outdoor skating rink by specifying genuine wrought iron pipe. More than 49 tons of Byers Wrought Iron pipe was installed. Len E. Rollins and Alfred J. Ryan, Denver, were the consulting engineers; Mitchell and Trautman, Inc., Denver, handled the fabrication.

The University of Denver Arena and Rink, in the University's field house, is safeguarded against excessive maintenance by more than 45 tons of Byers Wrought Iron pipe. The rink, 185 feet long and 88 feet wide, is used for hockey events and recreational skating by the students and public. Charles Dunwoody Strong, Denver, was the architect for the field house and the rink was engineered and designed by G. A. Post of Bevington-Williams, Inc., Indianapolis; Bell Plumbing and Heating Company, Denver, handled the fabrication.

This Denver round-up is another example of genuine wrought iron's widespread acceptance for rink service. You'll find the reasons why this material stays on the job longer, at lower cost per year in our bulletin, WROUGHT IRON IN REFRIGERATION AND AIR CONDITIONING SYSTEMS. Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

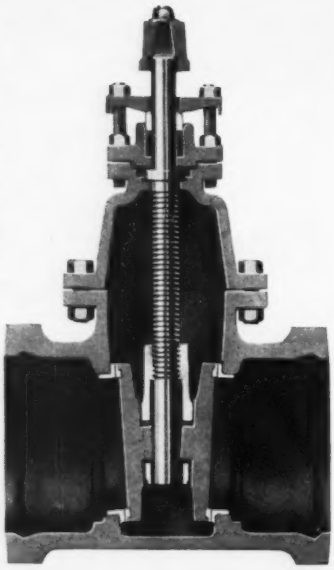
WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

R.D.WOOD GATE VALVES COST LESS BECAUSE THEY LAST LONGER

Because they are buried deep underground, gate valves are always laborious and expensive to repair. In addition, interruptions to service are hazardous to health and safety. R. D. Wood Gate Valves are specially designed for long use. They are simple and rugged in construction. They are fully bronze mounted. With the ordinary precaution of one annual operation, they give generations of dependable service. Therefore, *R. D. Wood Gate Valves cost less because they last longer.*



Only three moving parts—the spreader and two discs. In opening, the discs are lifted into the bonnet entirely clear of the seats. In closing, they are wedged into place without distortion. Seasoned castings. Rigidly inspected. Working pressure up to 175 lbs. Tested to 300 lbs. Conform to AWWA specifications. Supplied with bell, flanged or mechanical joint pipe connections.

R.D.WOOD COMPANY

Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

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FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

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Paul B. Watts, 228 N. LaSalle St., Chicago 1, Ill.
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B. H. Mueller Co., 6625 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Philip D. Barnard, 2036 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1758 W. 13th Ave., Denver 4, Colo.

WELDING CONNECTORS

Saxe Welding Connection Units position and secure structural parts to be welded.

Clip K3A permits an adjustable connection.

These widely used units eliminate all hole punching and, with welding, produce the most economical, safe and quickly erected structural frame.

Write for 1951 edition, Structural Welding Practice Manual.

J. H. WILLIAMS & CO.
Buffalo 7, New York
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New products . . .

Hidden beams, plumbing located by M-Scope

The fellow in this picture isn't hunting for uranium or some other precious metal with a Geiger counter. Rather, he's a construction employee and is using a T-10 M-Scope to locate a water line, electrical box, beam, etc. which may be hidden in the brickwork of the circular wall. Later on he may use it to locate a manhole that's been covered with asphalt, or to trace the path of bent conduit tubing in a concrete floor to minimize breakaway for a new connection. Metal objects such as these are identified by a distinctive change in earphone tone as well as an indication on a visual meter. Easily adjustable for operation with either hand and quickly dismantled for storage or transportation, the 7-lb unit has come in handy often to locate small metal objects lost in soil, snow, wood, plaster and fresh or salt water. FISHER RESEARCH LABORATORY, INC., 1963 UNIVERSITY AVENUE, PALO ALTO, CALIFORNIA.

Lead lubricant introduced

Lead has long been regarded as a fine lubricant but its use in metallic form has been prevented by the lack of a successful method to keep it from settling out of suspension. Now a heavy-duty grease lubricant, known as LEAD-LUBE, is available. It's a homogeneous blend and represents a definite forward step in the lubricating field, according to the manufacturer.

The function of metallic lead in LEAD-LUBE is to form self-lubricating surfaces over all the wearing parts of gears and bearings, so that the actual surfaces will be protected from wear. In the case of older equipment the

(Continued on page 156)

Put PUMPCRETE ON the Spot and LEAVE IT THERE!

When your job calls for wide area pours, there's no need to pay the high cost of moving mixing and placing equipment from spot to spot . . . not when you use Rex® Pumpcrete®. With concrete by pipe line, you just spot the Pumpcrete in the one most advantageous location and extend the pipe to the various forms as needed. This makes Pumpcrete ideal for such jobs as sewage and water treatment plants, housing projects, wide area slab work, viaduct piers, etc. From the one location you can place concrete up to 1,000 feet horizontally and 120 feet vertically.

Just Look at the Savings

- **No moving of heavy equipment from place to place**
- **Eliminates preparatory roads, trestling, towers, scaffolding, etc.**
- **No buggies or buggy runs**
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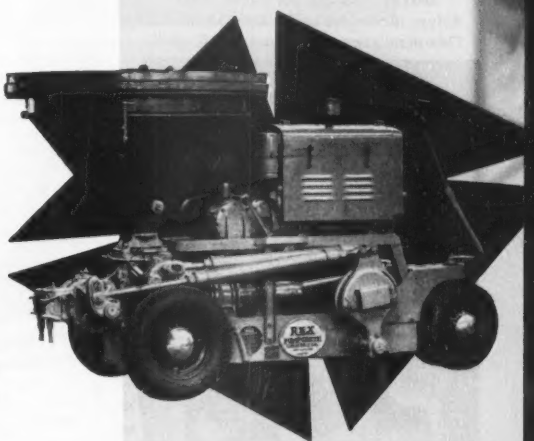
- **No interference with various crews**

Investigate today the savings concrete by pipe line can mean for you. Get the details from your local Rex Distributor or write to Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wisconsin.



CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY . . .

D TOURNAPULL moves 785 cu. yds. garbage . . . 120 yds. dirt blanket per day

TO modernize their garbage disposal, the city of El Paso, Texas, recently purchased an electric-control, rubber-tired D Roadster Tournapull. With addition of dozer blade, their "D" functions as an all-purpose city utility tool. According to Ed. F. Muckelroy, Supt. of Sanitation, "Comparing unit with crawler-tractor, same amount of material can be covered *in half the time*. Unit definitely cuts costs of landfill garbage disposal." Here's how it works:

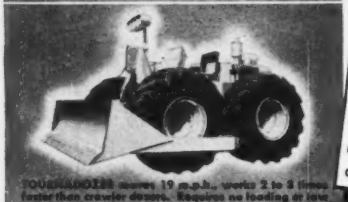
Dozes, covers on same pass

Refuse is dumped at fill site from trucks. One-man operated Tournapull bull-dozes refuse down slight grade and covers it on same pass. At bottom of grade, "D" self-loads dirt in 7-yard scraper, then spreads it on return. Wide 18.00 x 25 low-pressure tires, compact refuse on normal cycle. Simple, fingertip electric switches speed all dozer and scraper operations . . . response is instantaneous.

Fast-moving D Roadster makes profitable use of idle time . . . goes anywhere in city at 28 m.p.h. to handle scattered municipal maintenance assignments. Maintains alleys . . . hauls, spreads cinders and gravel surfacing, grades parking lots. Can also plow as well as load and haul snow and ice from city streets. Mobile "D" is always ready to drive at a moment's notice.

Consider how much more work per tax dollar D Tournapull can do for you, then contact your LeTourneau Distributor for all the facts on how you can make your municipal appropriation go farther.

TOURNAPULL goes anywhere, fast . . . self-loads, digs emergency drains, trenches, water reservoirs, removes rubble, maintains roads, escape routes.



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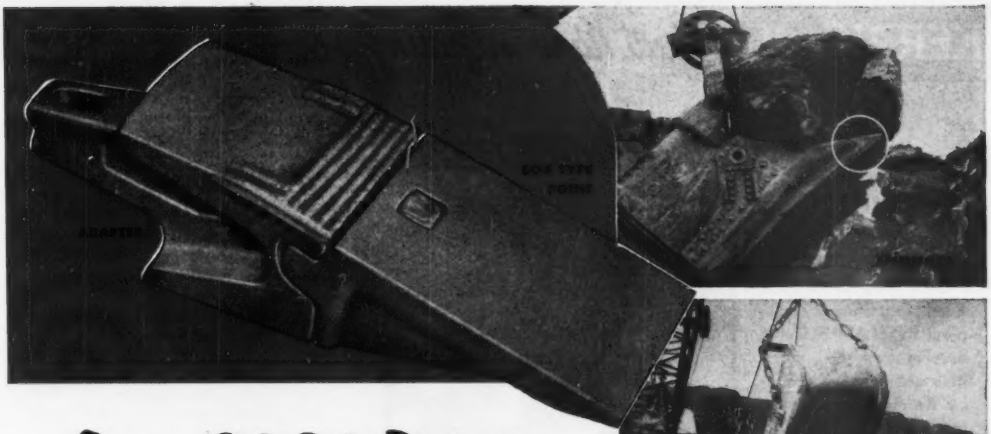
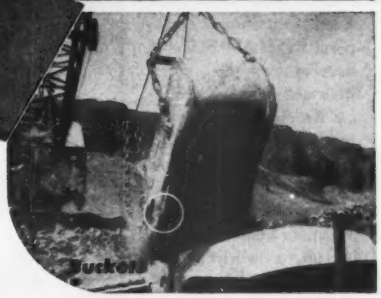
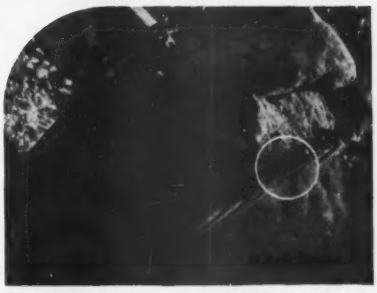
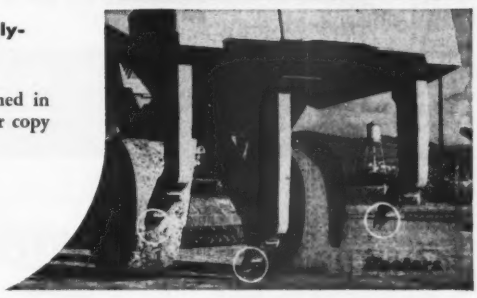
(*Continued on page 158*)









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New Product briefs . . .

Recently a number of **steam generators of Superior Combustion Industries, Inc., Boston, Mass.**, have been built especially for outdoor installation and to cover the vital working parts, a special **canvas housing** has been designed called a "dog house". While providing required protection, this housing makes all working parts readily accessible. Safety features include power lockouts to prevent operation with the doors closed when an engineer is in the enclosure.

A new **tool designed for cutting channels in walls and floors** for installation of electric, gas and water connections is now under manufacture by **Messrs. Cox Geelen, Koningsplein 63, Maastricht, Netherlands.** It's a steel gauge, one end of which is in the shape of a semi-circular slot 1⅛-inches wide. With a hard steel cutting edge, on one end and a hammer head on the other, it is said to replace normal chisels for slot cutting, and will not damage even light interior walls. Total weight is less than 1½ lb.

Masonite Corporation has made available ¼ in. and 3/16 in. **standard and tempered Duolux hardboard.** More dense than tempered Presdwood it is the ideal hardboard product where exposed uses require a panel with two smooth faces. Tempered Duolux is recommended rather than standard Duolux for all applications involving wear, high or extremely fluctuating humidities and exposure to the elements.

A **wire rope lubricant**—Texaco Crater A—has unusual penetration and adhesion properties which will permit application to wet wire rope. Made by **The Texas Company, 135 East 42nd Street, New York,** it is said to remain pliable under a wide range of atmospheric conditions, and will not drip or evaporate in hot weather.

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PUBLICATIONS

Product Selector—Available in two sizes (22x34 in and 10½x16 in) this handy four-color laminated wall chart shows the right product for every piping need. By a simple glance, it will answer questions regarding couplings, clamps, fittings and repair devices for pipe of every kind and size. DRESSER MANUFACTURING DIV., BRADFORD, PA.

The Surveyor's notebook—Is a 16-page illustrated collection of short articles on unusual surveying problems and their solutions, told in the surveyor's own words. Relating actual field problems and how they were solved, the stories are reprints from engineering journals. Unusual stories include the problems of surveying in the Arctic; unique transit practices of the Corps of Engineers in obtaining the first accurate survey of the Niagara River bed and use of transits and levels inside an aircraft plant. W & L. E. GURLEY, UNION PLAZA, TROY, N. Y.

Unibilt steel structures—Structural features of prefabricated insulated steel buildings are shown in simplified architectural form in Bulletin 107 from the Brookville Manufacturing Co. Standard units used in single or multiple series for erection of most any size industrial warehouse, school or large utility building are illustrated. BROOKVILLE MANUFACTURING CO., BROOKVILLE, PA.

Movable metal walls—"An efficient, economical way to solve space problems" is the theme of this 48-page ring-bound book, designed as a working tool for those who deal with the problem of changing space requirements. Separate sections are devoted to the description and illustration of various types of movable walls as well as accessories offered by the company. In addition to installation and construction photographs and detailed construction drawings, Catalog 52 contains complete specifications data. MILLS COMPANY, 975 WAYSIDE RD., CLEVELAND 10, OHIO.

Wood treating specifications—A guide enabling builders to specify the proper type of pentachlorophenol for building lumber has been made available by the Dow Chemical Co. who also supplies lists of sources for "penta" treated wood and for wood treating solutions containing the protective chemical. DOWICIDE SALES, THE DOW CHEMICAL COMPANY, MIDLAND, MICH.

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EDITORIALS

The Missouri River flood

JUST AS LAST SUMMER in the Kaw River Valley, so now along the stretches of the middle Missouri River, prayers go up for storage reservoirs. No longer is flood control damned as a pork barrel operation. As high water creeps into cities and overflows farms, the dams that are incomplete or still merely on paper suddenly acquire a value even in the eyes of their erstwhile critics. And well they might.

Had closure been made at Fort Randall Dam it would have knocked considerable crest off the present rampaging Missouri River. And had Garrison Dam also been closed, the Big Muddy could probably have been held to bank-full and manageable proportions.

This was the considered opinion last week of Brig. Gen. Don G. Shingler, Missouri River Division Engineer, as he and his flood-fighting Corps of Engineers personnel sought to strengthen and raise the levees built to protect the twin cities of Omaha and Council Bluffs. Completed only three years ago, these levees were not designed to afford complete protection from a flood the magnitude of this one. Such protection could only be assured if they were supplemented by storage in the four upstream reservoirs, Fort Peck, Garrison, Oahe and Fort Randall.

It is no secret that both Fort Randall and Garrison were allowed to lag nearly a year behind their construction schedules by the lack of sufficient federal appropriations in past years. An old axiom says that, above a certain flood elevation, levees are no better than the people behind them. The same applies to any valley-wide flood-control plan, and "the people" in this case include the federal government that provides the funds; local interests who must provide right-of-way for federal levees and maintain them; engineers who design them; and contractors who build them.

In the case of both the Kaw River and Missouri River flood control programs, the Army Engineers and the contractors have done their part of the job well and to the limit of the funds supplied them. But if Congress and local interests really want effective flood control they will have to do their parts better.

Local action favored

GOVERNOR DEWEY of New York, in signing a bill authorizing that state to enter into a compact with New Jersey, Pennsylvania and Delaware for future development of the water resources of the Delaware River, made this pertinent comment: "Clearly the great potentialities inherent in the project justify thorough exploration of its practicability. Further delay would leave open the possibility of federal bureaucracy moving in to the detriment of each of the states."

Some influential people and organizations in New York City, who favor using the Hudson River as a source of further water supplies for that city instead of the headwaters of the Delaware, had urged the Governor to veto the bill. That would have been a serious blow to the Interstate Commission on the Delaware Basin (Incodel), which has been working hard for several years toward consummation of a compact.

Even though New York City should decide to go to the Hudson for additional water, a compact between the four states still would be highly desirable, because the time is fast approaching when New Jersey must look to the upper Delaware for additional water supplies. And with the great increase in population that must follow the opening of the new steel mills at Morrisville in Pennsylvania, it appears probable that Pennsylvania will soon be more interested in conserving the water resources of the Delaware than it is at present.

Joining in a compact does not, of course, commit any state to adopt verbatim the Incodel plan for development of the river as now drawn. New Jersey and Delaware have approved the compact proposal and Pennsylvania has it under study. Consequently Governor Dewey does well to keep open the way for New York State to continue its support.

Jargon can be harmful

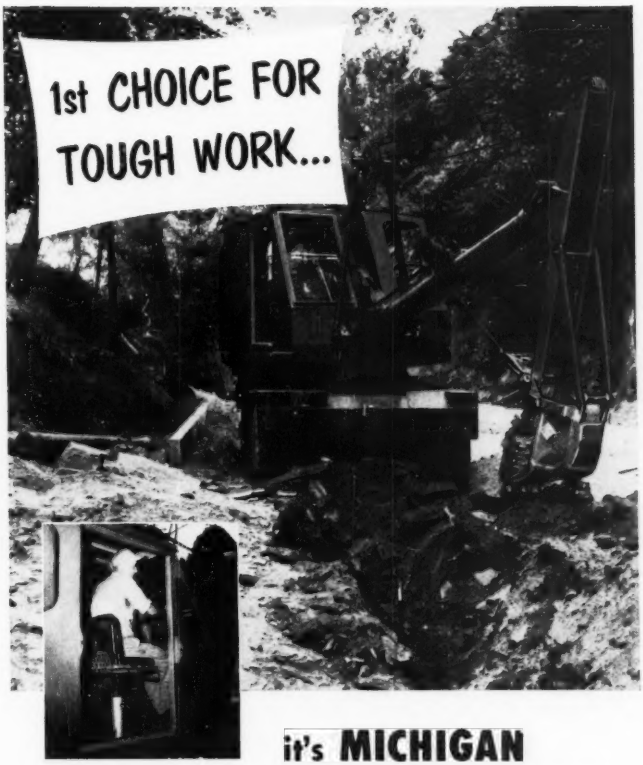
RECENT EVENTS—connected with the charges and countercharges flying about over construction of airbases in North Africa—have made it clear that too free use of construction jargon can be very harmful to the construction industry when it stands before the general public.

The particular jargon in question is the term "cost plus."

Most construction men understand that "cost plus," as used today, isn't a complete term, but a shortened version of "cost plus fixed fee." But the general public—and more importantly the Congress—doesn't understand that at all. Probably harking back to World War I, they are thinking of the long outmoded "cost plus a percentage" contract. So the general impression is that "cost plus" signifies that the more the cost, the greater the profit.

J. B. Bonny of the Atlas Constructors, made the needed point (ENR April 3, p. 23), when he said: "It should be made crystal clear that a contractor on a cost-plus basis doesn't get a single nickel over and above his fee."

The way to make it "crystal clear" is for engineers and contractors to watch their jargon when they talk for general consumption—and make sure they are exactly understood.



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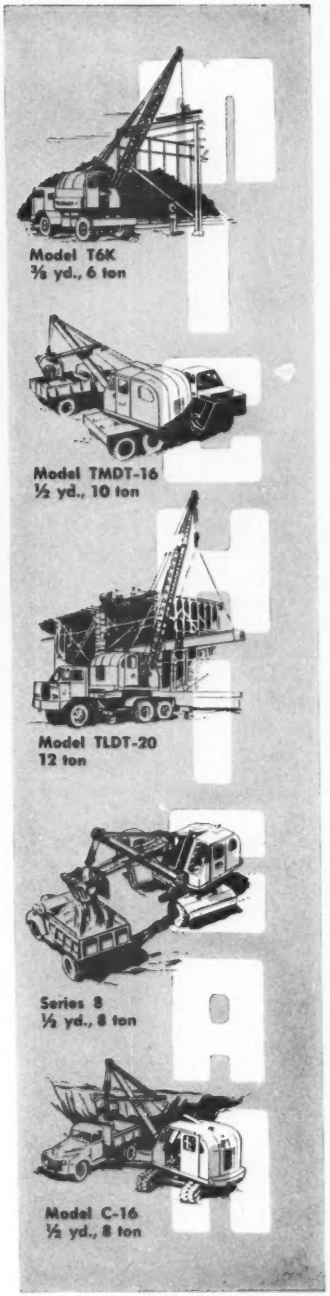

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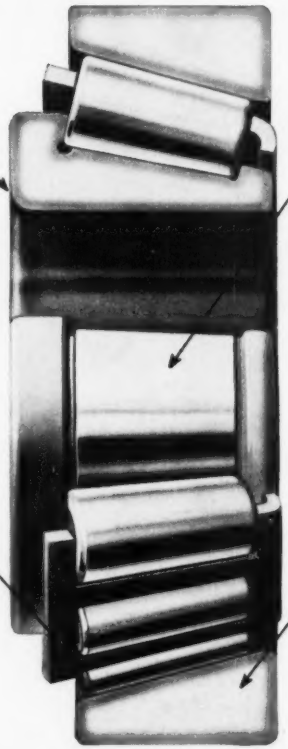

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